# Case: Tina Moore v. Brian Kaminski, et al.

4:14-CV1443 SNLJ, etc.

## Transcript of: Michael Graham, M.D.

**Date:** March 8, 2016

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EXHIBIT
17

TINA MOORE, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE ESTATE OF JASON MOORE, DELORES MOORE, AND RENEE RODGERS, AS NEXT FRIEND FOR A.D.R., A MINOR,

PLAINTIFFS,

VS.

BRIAN KAMINSKI, ET AL.,

DEFENDANTS.

DEPOSITION OF
MICHAEL GRAHAM, M.D.

MARCH 8, 2016

IN THE DISTRICT COURT
FOR THE EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION

TINA MOORE, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE ESTATE OF JASON MOORE, DELORES MOORE, AND RENEE RODGERS, AS NEXT FRIEND FOR A.D.R., A MINOR,

PLAINTIFFS,

Vs. No. 4:14-CV1443 SNLJ
4:14-CV1447 SNLJ
(Consolidated)

BRIAN KAMINSKI, ET AL,

DEFENDANTS.

Deposition of MICHAEL GRAHAM, M.D., taken on behalf of the Plaintiffs, at St. Louis University School of Medicine, 1402 S. Grand, St. Louis, Missouri 63104, on the 8th day of March, 2016, between the hours of 2:08 p.m. and 4:44 p.m., before Linda DeBisschop, CSR, CCR, Illinois CSR No. 084.004741 and Missouri CCR No. 779.

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(Exhibits are attached to transcript.)

VIDEOGRAPHER: We are on the record at 2:08. Today's date is March 8, 2016 and we are at the office Dr. Michael Graham. We are here today for the deposition of Dr. Michael Graham to be taken in the case of Tina Moore versus Brian Kaminiski, et al.

At this time would counsel identify themselves for the record, please.

MR. FLOYD: Mark Floyd representing Tina Moore.

MR. DOWD: Bill Dowd representing Tina Moore.

MR. JOHNSON: Todd Johnson representing Delores Moore and Renee Rodgers.

MS. SHAFAIE: Ida Shafaie representing defendants.

VIDEOGRAPHER: Thank you. Would the court reporter please swear in the witness.

MICHAEL GRAHAM, M.D.,
Of lawful age, having been first duly sworn to Testify the truth, the whole truth, and Nothing but the truth in the case aforesaid, Deposes and says in reply to oral Interrogatories, propounded as follows, to-wit:

[EXAMINATION]

BY MR. FLOYD:

**Q** Good afternoon, Doctor.

**A** Hi.

**Q** My name is Mark Floyd, and as I just stated, I'm representing Tina Moore. We've asked you here today to take your deposition so we can learn a little bit about some of the opinions that you're going to giving in this case at trial.

Before we get started, could I take a look at your file there?

**A** Sure.

**Q** Does this folder contain all of the documents that you have related to this case?

**A** I have documents that I reviewed that are too voluminous to put in there.

**Q** Do you have any e-mails that aren't contained in this file?

**A** I think they are just related to logistics. I didn't keep them. Nothing with any substance in them.

**Q** Are your billing records in this file?

**A** Yes.

**Q** I don't see like an engagement letter.

Do you have an engagement letter from Mr. Dunne?

**A** I just have the first page there or that first cover letter accompanying the materials.

**Q** When I read that letter, it looks like he's sending you a list of materials to be reviewed without asking you what to do with those materials.

I almost read into it that there had to be a conversation in addition to this letter?

**A** They probably called me on the phone.

**Q** Do you recall what your conversation was with Mr. Dunne when he asked you to be involved in this case?

**A** I mean, vaguely. I think he just asked me if I had time to review an arrest-related death.

**Q** And you knew that Peter was defending the City of Ferguson and a police officer?

**A** I didn't, but he probably told me.

**Q** I mean, you certainly knew that before you generated any report, correct?

**A** Yes.

**Q** In fact, you have reviewed the pleadings in this filed that we filed, that the attorneys filed.

You reviewed the pleadings, have you not?

A I probably took a look at them.
Q Why do you want to review the pleadings?
A They were sent to me.
Q Do you know why they were sent to you?
A No idea.
Q Did you review them?
A You know, I think I glanced at them, but all the legal talk and stuff, I kind of gloss over it. It doesn't mean anything to me.
Q You've been involved in legal depositions for decades, have you not, Doctor?
A I have.
Q So you know a little bit more about legal talk than maybe what you're letting on?
A Not really, no. I try to stay out of the legal side.
Q How many depositions do you think you've given?
A Over my career?
Q Yeah.
A Oh, geez, I don't know, over 100 easily.
Q I mean, more than a thousand, isn't it?
A I doubt it.
Q How many times have you testified in court?
A Oh, in court including the work I do as a

medical examiner?

**Q** Yes.

**A** Hundreds.

**Q** And getting into your work in legal medical situations, you've testified in asbestos cases for 20 or 30 years, haven't you?

**A** About thirty.

**Q** And you testified primarily for on the defense of asbestos manufacturers that were being sued for exposing individuals to asbestos who oftentimes would die in alleged claims from asbestos exposure, is that correct?

**A** Yes.

**Q** And what years did you start providing expert testimony on behalf of the asbestos manufacturers?

**A** Mid-'80s.

**Q** And at what frequency were you doing that a year?

When I say frequency, how many cases a year were you consulting or reviewing on behalf of asbestos defendants?

**A** I mean, currently several dozen.

**Q** But going back into the '80s, the litigation was at a higher rate in the '90s and -- wasn't it?

**A** I couldn't tell you. I mean, in the '80s I didn't look at that many cases because I was just starting out doing them and then it just kind of built up over the years.

**Q** Was there a time in the past where you handled more asbestos cases than you do today?

**A** Probably not. It's been pretty steady probably the last eight to ten years.

**Q** And in addition to testifying on behalf of asbestos defendants, you also handled police custody death cases, is that correct?

**A** I look at some, yeah.

**Q** And the jury is going to hear TASER International throughout this case and you know who TASER International is, correct?

**A** Sure.

**Q** Are you still on their advisory board?

**A** I am.

**Q** How long have you been associated with TASER International?

**A** Well, I'd have to look at my CV. Ten or fifteen years maybe.

**Q** And TASER International manufactures the TASER weapons, is that correct?

**A** Sure.

**Q** And TASER International has been involved in litigation over the years when people sue them when there's a death that follows a tasing incident on an individual.

Do you agree with that?

**A** Yes.

**Q** And TASER has asked you to be on their advisory board, is that correct?

**A** Yes.

**Q** Ten or fifteen years?

**A** I think that's about right.

**Q** How did you develop that relationship with them?

**A** At least my understanding is they asked a variety of forensic pathologists who they would recommend to offer advice to TASER about arrest-related deaths. Apparently, my name came up a lot.

**Q** Have you ever been to TASER International headquarters?

**A** Yes.

**Q** Is that this Arizona?

**A** Yes.

**Q** Have you accepted anything of any value for them?

**A** I get compensated for being on the advisory board and I review cases for them.

**Q** Have they taken you on any trips?

**A** I mean, they pay for my trip when I go to, you know, speak on their behalf or, you know, take part in the meetings, but as far as sending me on vacation, no.

**Q** And have you -- have you given lectures for them?

**A** Yeah, I think once.

**Q** Were there power points for them or materials for the lecture?

**A** I did have a power point for that lecture, yeah.

**Q** Do you still have those materials?

**A** I doubt that I got that one. That was a long time ago and it was actually not so much about TASERS, but about just arrest-related or custody-related deaths in general.

**Q** And I also understand that you are the City of St. Louis Medical Examiner, correct?

**A** I am.

**Q** And you're Deputy Examiner in Jefferson County and St. Louis County?

**A** I am.

**Q** Do you have access to the files and medical records in St. Louis County from their coroner's office?

**A** I've got access to the cases that I do. I suppose I could get a hold of other cases but I don't.

**Q** I was just curious because at one point in your report you indicated that you would like to see the heart pathology slides of Mr. Moore?

**A** Yes.

**Q** And those were done in St. Louis County --

**A** Right.

**Q** -- where you're a deputy. I'm wondering, do you have access to that file?

**A** Well, I mean, theoretically I could go get it, but since I'm not involved in the case as a medical examiner, I would not.

**Q** Have you had a chance to review those slides?

**A** No.

**Q** Getting back to the legal work, how many -- let's talk about that a little bit. You know, taking into consideration cases involving TASER or cases against police departments or police officers, okay.

Focusing on cases against police departments and police officers, how many cases a year do you consult on those?

**A** Oh, I doubt that it's more than a couple.

**Q** And how many years have you been doing that?

**A** Probably 15, 20 years.

**Q** And do you have any other cases, like excessive force cases, do you ever handle any of those or are they only death cases?

**A** It would be anything that would involve forensic pathology, so it may not be a death case but it would involve injury or something like that. As far as whether or not excessive force was used, I don't have any opinions about that.

**Q** But when you say a few cases a year, does that include even the non-death cases?

**A** Sure.

**Q** And besides this case right now, this City of Ferguson case and Kaminiski case, do you have any other cases where you're consulting or been designated as an expert on behalf of a police department or police officer?

**A** I think maybe -- maybe one.

**Q** Okay. And you indicated that your fees, at least in the materials you gave us, were $500 an

hour?

**A** Yes.

**Q** And does that include $500 for reviewing medical records that come to you?

**A** All my time is billed the same.

**Q** So even reviewing those pleadings, you would have been billed for reviewing the pleadings that were sent, the petition we filed and scheduling order and all of that?

**A** Everything is billed at the same rate.

**Q** Okay. And then when you write a report, that's another source of billing, correct?

**A** Yes.

**Q** And then for testimony, is your testimony like the time that you're charging for your time here today, is that $500 or is that more?

**A** Same.

**Q** And for live testimony in the courtroom, what's your fee for that?

**A** Same.

**Q** Okay. Have you been asked in the past to estimate what your annual revenue is each year from your involvement with legal cases?

**A** I have for asbestos.

**Q** And do you recall -- when was the last time

you were asked that?
**A** Probably last week.
**Q** Do you recall what those figures are?
**A** Yeah, about $300,000.
**Q** $300,000 a year just for asbestos?
**A** Yes.
**Q** Okay. Then in addition to that, there would be income that you would make on police custody cases, correct?
**A** A little bit, yeah.
**Q** When I say police custody, I'm being loose with my words.
**A** I understand.
**Q** You understand legal expert, I think.
Is there any other medical legal work that you do outside of your employer, St. Louis University, St. Louis County, St. Louis City?
**A** All of my consultation work is done through the university.
**Q** Okay. And the fees that you generate on these expert arrangements, does that go to you?
**A** I get 60 percent of it. The university gets 40 percent.
**Q** Okay. And then you also earn a salary through St. Louis University as a professor?

**A** I mean, my compensation includes my consultation work, my university compensation.

**Q** And you -- you get a salary from the City of St. Louis?

**A** No. That's contract with the university.

**Q** Okay. And do you get a salary through Jefferson County or St. Louis County?

**A** St. Louis County I do. Jefferson County I don't.

**Q** Okay. So you get a salary through St. Louis University and then you also get a percentage, 60 percent of the money that you bring in on these expert fees?

**A** Yes.

**Q** Okay. And you estimate that's about three hundred thousand a year?

**A** About that.

**Q** Is that your 60 percent or is that --

**A** No, that's mine, yeah.

**Q** So the total that's brought in then is -- I'm not very good at math.

**A** About half million.

**Q** 40 percent, yeah, about a half million, okay.

Now, I mentioned before that your

testimony on behalf of asbestos cases is primarily when you've been hired by the asbestos manufacturers when they're being sued and you're testifying on behalf of the asbestos manufacturers, correct?

**A** Not so much on asbestos manufacturers. It's more end users.

**Q** End users. It's where people get exposed to it, maybe it's a premises liability now or Work Comp case, anything?

**A** Some of them.

**Q** But it's usually a person being sued that is responsible for exposing someone to asbestos, correct?

**A** That's the allegation.

**Q** Okay. And then on these police cases, your role is typically testifying on behalf of defending the police officer of the police department, correct?

**A** You know, actually over the years it's broken up pretty even between plaintiff and defense.

**Q** Are you handling any cases right now where you are testifying on behalf of a plaintiff that is suing any local police department or police officer?

**A** No. I think I just have one other case and I think it's for the defense.

**Q** When is the last time that you testified on behalf of a plaintiff that sued a local police department or police officer?

**A** Boy, I don't remember.

**Q** Could you even name one case?

**A** Not off the top of my head I couldn't, no.

**Q** So as we sit here today, you can't name one case where you've testified on behalf of a plaintiff that sued a local police officer or police department?

**A** Oh, I mean, as far as the most recent one I can't. I mean, I can in the past. It was an officer who was intoxicated while on the job I think working secondary security and shot somebody and I testified on behalf of the family in that one. A couple seminars.

**Q** Would you agree that the percentage of you testifying on behalf of the plaintiff is quite a bit less than on behalf of the police department or a police officer?

MS. SHAFAIE: Object to form.

**A** I think over the years it's been pretty even. More recently probably a little more defense.

**Q** (By Mr. Floyd) And I want to talk a little bit about your background. I've seen your CV.

I understand that you are a pathologist, board certified pathologist?

**A** I am.

**Q** You've been with St. Louis University for quite a number of years?

**A** Basically forever.

**Q** And you've been the chief medical examiner since 1989?

**A** Yes.

**Q** And you're a professor of pathology here as well?

**A** I am.

**Q** And we're going to hear from doctors in this case that are cardiologists or electrophysiologists. Do you know what they are?

**A** Yes.

**Q** Tell us what a pathologist is.

**A** Say a physician who practices pathology which is the study of the basic nature of disease and injury, how they occur, what they look like, what effects they have on people.

**Q** And when I hear the word pathology, to me looking at slides of cells and human tissue and in my field when we talk about, well, let's say was there a change in pathology, is there a definition

that pathology somehow relates to the anatomy or the tissue of a human being?

**A** No. Although that is an integral part of pathology. It's not present in all the cases that we do, but of the physicians who look at tissues, we're the ones that do it the most.

**Q** Most of the pathology work that you do is on decedents, is that correct?

**A** Yes.

**Q** I mean, I suppose there could be some pathology work on biopsies from cancer and things like that?

**A** Yes.

**Q** Would that be your department or oncology?

**A** No, no. That's pathology. The people who look at the tissue are the pathologists.

**Q** Do you do that?

**A** I do.

**Q** But the great majority of what you do is dealing with tissues from decedents and investigating that?

**A** Yes.

**Q** And what is your understanding of what a cardiologist does?

**A** A cardiologist is a specialty within or a

subspecialty within internal medicine that diagnoses and treats heart diseases.

**Q** And what about an electrophysiologist?

**A** Cardiac electrophysiologist?

**Q** Cardiac electrophysiologist.

**A** They deal primarily with the electrical system of the heart. They're kind of the arrhythmia doctors.

**Q** Do you understand the electrical system of the heart?

**A** In general I do, yeah, certainly not to the extent that a cardiac electrophysiologist should.

**Q** Have you ever heard of a doctor named Dr. Douglas Zipes?

**A** Yes.

**Q** And you've read his articles?

**A** I have or at least the ones related to TASERs I have, yeah.

**Q** Have you had cases in which he's testified on cases that you're involved in as well?

**A** You know, I think he and I were both on one case that I recall and I think we had the same opinion. I don't know that it was a TASER case. I think it was something else.

**Q** Dr. Zipes, did he graduate from Harvard

Medical School?

**A** I have no idea.

**Q** You've looked at his CV before?

**A** No.

**Q** Would you agree that he's a very well-known cardiac electrophysiologist?

**A** Yes.

**Q** Well known in the United States?

**A** Yes.

**Q** And that he's had articles published in the Journal of American Heart Association?

**A** I don't know. He's published widespread. I don't know what articles or journals in particular.

**Q** And I think asked this, but you've read some of Dr. Zipes' articles, have you not?

**A** I have.

**Q** Can you tell me what cardiac capture is?

**A** It's the response of the heart to electrical stimulus.

**Q** And you indicated earlier that the heart has electrical, I think you started to indicate this when we talked about what a, you know, cardiac electro-physicist does -- physiologist does.

That cardia capture, is that capturing the rhythm of the heart, the electrical

pulse?

**A** Yes.

**Q** And you understand that in one of Dr. Zipes' articles he indicates that he concludes that ECDs, TASERS can result in cardiac capture and death.

Are you aware of that?

**A** Yes.

**Q** And he is, in fact, a cardiac electrophysiologist, correct?

**A** He is.

**Q** And that's directly in the specialty of what he handles that subject matter, correct?

**A** Cardiac capture, yes.

**Q** And do you -- do you disagree with Dr. Zipes?

**A** I disagree with the death part. The cardiac capture I think is pretty straightforward, that rarely TASER has been shown to cause cardiac capture that has not been unequivocably shown to cause death of a spike direct by electrocution, if you will.

**Q** Do you agree that there are many cases, even hundreds of cases, where people have been tased and then following the tase they've died?

**A** No.

**Q** Okay. You read articles, I'm sure, right,

of what's going on since 2001 and even before that where there have been TASER-involved deaths?

**A** There have been deaths that are temporally related to Tasers. I don't think it's in the hundreds. I mean, I think Dr. Zipes found eight cases he thought qualified.

**Q** I don't know if he said that there were eight cases that qualified. I know that he reviewed eight cases and found that all of those are related to TASER death, but I don't know if he's saying those are the only eight that ever happened.

**A** No, I mean I thought he said he found eight that he attributed.

**Q** That article, are you suggesting that that article states that there were only eight cases?

**A** No.

**Q** Okay. Because that's not what it states, correct?

**A** Correct. He reviewed eight and that he thought qualified as being related to TASER.

**Q** You would agree that your position that TASER, that a TASER load sustained by an individual cannot cause death, that that position that you hold is opposed by many qualified physicians?

**A** First of all, I've never said TASER can't

cause death because certainly there has been a variety of mechanical injuries consequent to a TASER discharge where death has occurred. I don't think anybody would argue about the head injuries and a few fires and some drownings.

As far as the electrical stimulation of the heart, now I think I'm in the majority of the opinion that has not been unequivocably shown to cause death although theoretically it could.

**Q** Okay. But you agree there are many competent physicians who disagree with you?

**A** I don't know that there are many. People who have studied the area. I don't know that there are many.

**Q** Dr. Zipes, one of the most prominent cardiac electrophysiologists, disagrees with you, correct?

**A** Yes.

**Q** And when you were hired on this case, this Moore case, who hired you?

**A** Pitzer Snodgrass.

**Q** And have you worked for Pitzer Snodgrass in the past?

**A** A few times.

**Q** Have you worked for Peter Dunne in the past?

**A** That I couldn't tell you.

Q When was the first time that you talked to anybody about this case?
A It would have been when they called me and asked me if I had time to review it.
Q When would that have been?
A I mean, obviously, some time before October -- I'm sorry, August 18th of last year, but how long it took them to send materials I don't know.
Q It could have been a year before that?
A No, I don't think so. I think it was pretty close to it. That's what usually happens.
Q But you don't have that document?
A Well, there's no document. Somebody calls me on the phone and says do you have time and I never write that stuff down because most of the time there is no followup with it.
Q When did you come to your first opinions on this case?
A I mean, after I reviewed the material. I couldn't tell you what day it was.
Q Do you have notes from when you reviewed the material?
A I do.
Q Did you date your notes?
A No, I never do.

**Q** How come you don't date them?

**A** No reason to. It doesn't matter to me what day I do it. The ends result is what matters to me.

**Q** What about if you view additional information, would that change your opinion?

**A** Of course.

**Q** You don't want to keep dates as to when you reviewed materials and when you didn't?

**A** No. That doesn't do me any good.

**Q** Okay. Tell me what you reviewed before you arrived at your opinions?

**A** I had the death certificate, the autopsy report, medical records from Christian Hospital, the Ferguson Police Department records, statements by Fatima Shurn, Alan Schilling, TASER firing data, the first amended consolidated complaint, the amended case management order, photographs, documents from TASER, depositions of Brian Kaminiski, Michael White, Matthew Bebe, Jon Brannan, William Ballard, Delores Moore, Tina Moore, Renee Rodgers, Anthony Rice, Dr. Cuculich, Shannon Dandridge, Claudette Boyce-Rice, expert reports by Dr. Cuculich and Ron Martinelli along with their accompanying documents. Dr. Cuculich's power presentation or power point presentation and Plaintiff's Rule 26 Disclosures.

**Q** I didn't see your billing records in the file. Could you pull those up for me?

**A** Sure. Right there.

**Q** How much have you billed so far in the case?

**A** Seven and a quarter hours.

**Q** Now, did you read all the depositions?

**A** You know, I glanced at some of them. Some talked about his, you know, kind of family life and stuff like that which really had nothing to do with what I did, so I didn't read parts like that.

**Q** Do you know Mike Brave?

**A** I do.

**Q** And who is he?

**A** He's a lawyer for TASER.

**Q** Do you know Patrick Smith?

MR. DOWD: Rick Smith.

**A** Oh, Rick Smith, yeah, I do.

**Q** And who is he?

**A** He used to be president of TASER.

**Q** And have you spoken with TASER International or any of their representatives about this case?

**A** No.

**Q** Did you speak to -- well, let's go back.

In preparation for this deposition, what did you do?

A I just reviewed my file.
Q And in addition to the documents that you've listed there, have you spoken to anybody that's not included in your document list there?
A No.
Q Have you spoken to anybody about this case other than Peter Dunne or your attorneys?
A I don't think so.
Q Have you spoken to Officer Kaminski?
A Oh, no. I know I have not spoken to any police officers at all.
Q Have you consulted with any cardiologists on this case?
A No.
Q Have you consulted with any cardiac electrophysiologists?
A No.
Q Have you contacted or spoke with, is it Dr. Sabharwal? What's his name in St. Louis County Medical Examiner's Office?
A Oh, Sabharwal?
Q Yeah, Sabharwal. Have you spoken with him?
A You know, I may have mentioned that I was looking at one of his cases, but I didn't discuss it with him.

**Q** You haven't consulted with any other physicians, is that what you're telling me?

**A** I haven't consulted with anybody on this case.

**Q** All right. And there's some mention in your report about agitated delirium and psychosis, so when we talk about agitated delirium, we probably should talk about excited delirium, too. Are those two --

**A** I think it's the same thing.

**Q** Okay. What is agitated delirium?

**A** It's a syndrome characterized by intermittent excessive agitation, often anxiety, often violence.

In many cases hyperthermia, but certainly not the majority at least in this area of the country. Often paranoia generally induced by stimulants, but occasionally seen in the setting of psychosis.

**Q** How common is agitated delirium?

**A** I think it depends on the definition that you use and then how strict your criteria are. If you look at people brought into emergency departments by the police, it's actually fairly common. The full blown syndrome is fairly unusual.

**Q** But individuals that are brought in by police with at least some level of agitated delirium is pretty common?

**A** Yeah. That's what the current literature would indicate, yeah.

**Q** And you having been involved and being involved in police custody, arrests slash death cases, it's almost mandatory for you to become familiar with agitated delirium and excited delirium. Is that a fair statement?

**A** We've been familiar with it for 35 years.

**Q** And you would agree that it's next to impossible for a police officer to expect to conduct his daily activities and not come in contact or have to deal with an agitated delirium situation?

MS. SHAFAIE: Objection to foundation. You can answer.

**A** I don't know that that's true. Yeah, I don't know if that's true or not.

**Q** (By Mr. Floyd) Well, with you having told me how common it is and how you've been dealing with it for 35 years, if an officer is gonna -- let's take it a step further.

I mean, a police department should certainly be prepared to deal with that condition,

wouldn't you agree?

MS. SHAFAIE: Form and foundation. You can answer.

**Q** (By Mr. Floyd) Based upon the frequency in which it comes up for your testimony?

MS. SHAFAIE: Same objection.

**A** Well, what a police department should or should not do I'll leave up to the police experts.

**Q** (By Mr. Floyd) But you would agree that you can expect them to come -- toc come into contact with agitated delirium situations?

MS. SHAFAIE: Same objection.

**A** Large municipal police departments or large urban departments I would expect the department to, the individual officer most probably don't.

**Q** (By Mr. Floyd) I mean, would you agree that a police department would have to pretty much have their head buried in the sand not to have heard about excited delirium or agitated delirium over the last twenty years?

MS. SHAFAIE: Same objection.

**A** Probably in the last few years that's true. Prior to that, especially a small police department, maybe not.

**Q** (By Mr. Floyd) And you would agree there

are cases in the Eighth Circuit that go back to the 1990s dealing with agitated and excited delirium. Would you agree with that?

MS. SHAFAIE: Foundation.

**A** I have no idea what's in the Eighth Circuit. I don't even know where the Eighth Circuit is.

**Q** (By Mr. Floyd) When did -- when did you first give testimony in a case about excited delirium or agitated delirium, what year?

**A** I have no idea.

**Q** Would it have been the 1980s?

**A** We certainly recognized it in the '80s, I don't know if I ever testified about it back then, be we certainly recognized it then.

**Q** You would have certainly testified about it in the last 20 years, wouldn't you?

**A** Yes.

**Q** And in the last twenty years you would have -- even twenty years ago you would have attributed deaths in police custody to excited delirium or agitated delirium, wouldn't you?

**A** Yes.

**Q** And you've been doing that for twenty years, correct.

**A** More than twenty.

**Q** And you work closely with police departments, right, in dealing with deaths?

MS. SHAFAIE: Foundation.

**A** We're an independent agency. I mean, we obviously work with investigators from the police, but we're not part of the police.

**Q** (By Mr. Floyd) But they have to communicate with you, correct?

**A** Sure.

**Q** And so there's a level of communication between the medical examiner's office and the various police departments, fair statement?

**A** Fair statement.

**Q** And you've communicated to police officers your understanding of excited delirium and agitated delirium, have you not?

**A** I have.

**Q** You've lectured over it?

**A** I have.

**Q** This information is widely available for any police department if they want to obtain it, correct?

MS. SHAFAIE: Foundation.

**A** I don't know how widely distributed it is among the law enforcement literature. I know it is

in the law enforcement literature, but I don't know to what extent. It's also in the medical literature that most police departments aren't real rigorous in looking at the medical literature.

**Q** (By Mr. Floyd) Is that responsible?

MS. SHAFAIE: Foundation.

**A** I don't -- I mean, any more than I would look at or know the law enforcement literature, I don't expect them to know the medical literature.

**Q** (By Mr. Floyd) Knowing what you know and I'm taking into consideration that you've been testifying in legal cases for better than 30 years, if you were running a police department, would you want your police officers to be knowledgable about agitated and excited delirium?

MS. SHAFAIE: Form and foundation.

**A** Yes.

**Q** (By Mr. Floyd) Okay. No question about it, is there?

**A** Not really.

**Q** And if you Google excited delirium or agitated delirium, your result screen will just be full of articles and stories, correct?

MS. SHAFAIE: Same objection.

**A** I have no idea. Never done it.

**Q** (By Mr. Floyd) What is the psychosis that you're referring to in your January 28, 2016 report?

**A** People who are psychotic can develop agitated delirium without the use of exogenous agents.

**Q** Dr. Sabharwal, is that how you say his name?

**A** Sabharwal.

**Q** Sabharwal.

**A** Uh-huh.

**Q** Dr. Sabharwal reported that cause of death was agitated delirium and you say that cause of death was, and maybe you had the same cause of death.

Cause of death as agitated delirium secondary to psychosis, is that right?

**A** Yes.

**Q** Can you describe for me or explain to me the mechanism of death from agitated delirium secondary to psychosis?

**A** The mechanism through which excited delirium kills people isn't clear yet, whether it is primarily a central mediated event or a metabolic perturbation isn't known.

**Q** You were asked back in 2009, at least that far back almost seven years ago in court, to

describe the mechanism of death from agitated delirium and at that time you were not able to describe the mechanism of death, is that correct?

**A** Yeah, we still don't know.

**Q** You had seven years to work on it and you still don't have an answer?

**A** Collectively, you really can't work on it because there is no good laboratory model to use to try to study it and you certainly can't study it on humans.

**Q** As a pathologist, can you put your finger on one piece of pathology that supports that Mr. Moore died from agitated delirium secondary to psychosis?

**A** Well, certainly you would never give a cause of death opinion in somebody by looking just at one thing and taking it out of context. The context of this particular death is fairly typical of an agitated delirium related death.

**Q** And what is that?

**A** In that you have somebody who shows signs of agitated delirium typically is forcibly restrained and then shortly thereafter has a cardiorespiratory arrest.

**Q** Do you believe that the TASER discharge captures and disrupts heart rhythm, that it can?

**A** It can.

**Q** And we discussed what cardiac capture is. Does cardiac capture cause a heart to go into ventricular fibrillation?

**A** No. The energy needed for fibrillation is stronger than that needed for capture.

**Q** Explain that to me.

**A** It takes more power or more energy, more electrons or more charge, probably the better term, to induce v-fib than it does to just cause capture.

**Q** Okay. So if a heart has an electrical insult, whether it be from touching a 220-volt hot wire some type of an electrical insult --

**A** Okay.

**Q** -- that interferes with the rhythm of the heart, can that result in ventricular fibrillation?

**A** I mean, your parameters are too vague, but you can supply enough energy to the heart to cause ventricular fibrillation. That's what electrocution is.

**Q** Well, electrocution can cause ventricular fibrillation, correct?

**A** Electrocution, that's the way electrocution works. It causes v-fib.

**Q** And we'll call it v-fib instead of

ventricular fibrillation. It's shorter that way.

With regard to what cardiac electrophysiologists do, they can actually use electrical energy to cause a heart to go into v-fib, correct?

**A** Do it every day.

**Q** And they can use electrical energy to get a heart out of v-fib, correct?

**A** They do it every day.

**Q** And the electrical energy applied to the heart is directly related to v-fib. Do you agree with that?

**A** If you supply enough energy it is. If you don't, then it won't. But there are thresholds for the human heart below which it won't fibrillate, and if you give it enough energy in the right manner, then it can, sure.

**Q** Are there doctors that disagree with you as to the level of energy necessary to induce a v-fib?

**A** I wouldn't know. I mean, that is pretty well into the cardiac literature as to how much charge it takes.

**Q** And electro -- a cardiac electrophysiologist would be certainly within his area of specialty to answer that question, would he not?

**A** I would think so.

**Q** Okay. And when we talk about v-fib just for the jury, can you tell us what v-fib is?

**A** It's basically that the muscle fibers are no longer contracting in an organized fashion. The muscle fibers still contract on their own, but they have no organized rhythmic contractions, so they're just -- basically it sits there and quivers.

**Q** And from a lay person's understanding, I understand that is it the myocardium in the heart that produces electrical pulse?

**A** No. The myocardium --

**Q** What part produces the electrical pulse?

**A** Well, each cardiac muscle fiber is capable of beating on its own. That is what cardiac or heart muscle fibers can do. The myocardium is the heart muscle fibers.

**Q** Okay.

**A** The organized rhythmic beating of the heart is related to the generation of electricity by usually the sinoatrial mode and then that's modulated by the atrial ventricular node, and then as the current passes through there, it then goes to the working myocardium where basically it tells all the fibers when to contract.

**Q** And this electrical pulse that's created by the heart, that causes a contraction in the heart and causes the heart to pump?

**A** It causes the -- a coordinated contraction. I mean, if you just take heart muscle fibers and, you know, put them in a jar, they'll contract all by themselves. They have the innate ability to do that, but it wouldn't be in organized fashion and you'd need an organized contraction.

**Q** And so this electrical pulse and the heart rhythm that's an organized contraction of the electrical pulse causing the heart to contract which pumps blood through the valves, correct?

**A** Correct.

**Q** Okay. And when someone gets in v-fib, that means that, and this is layman's terms, that that rhythm has been disrupted and it could be almost spasming or quivering and the heart is not getting pumped to the blood?

**A** The -- it's not just the disruption of the rhythm. There are lots of ways you can disrupt the rhythm. Some of them may be --

**Q** Knocked out of rhythm. The rhythm has been changed?

**A** Yeah. Basically, you have no rhythm

anymore.

**Q** Okay. So you have an uncoordinated event?

**A** You have uncoordinated contraction of the muscle.

**Q** Uncoordinated contraction. And I've read and seen and heard the term that they are just kind of quivering?

**A** That's correct.

**Q** And that since it's not coordinated, the blood is not getting through the heart?

**A** That's correct.

**Q** And that's what v-fib is?

**A** That's what v-fib is, yeah.

**Q** Okay. And atrial fibrillation, that happens in a different part of the heart and it's not really that dangerous.

Is that a fair statement?

**A** I mean, it's a substantial risk factor for stroke if the person isn't treated --

**Q** Because of --

**A** -- again the coagulants.

MS. SHAFAIE: Let him finish. Go ahead.

**A** Yeah. Yeah, the atria are the receiving chambers of the heart, they are the upper chambers. In someone who is otherwise healthy, they don't add

a whole lot to the function of the heart, but if they're not working, you can get eddies and stasis of blood.

And if you get blood clots, then they can break off and go to the brain or things like that, which is the real danger of atrial fibrillation. For somebody with a compromised heart, atrial fibrillation can be detrimental, but it certainly doesn't carry the import of ventricular fibrillation.

**Q** So when we're talking about v-fib and a-fib---

**A** Totally different things.

**Q** -- totally different things?

**A** Yes.

**Q** V-fib is very dangerous?

**A** Oh, yeah.

**Q** Lethal, correct?

**A** Lethal unless you are somewhat taking over for the circulation. Well, without therapy or some other intervention, yes, it's lethal.

**Q** So interfering with the coordinated rhythm of the electrical heart beat can lead to v-fib?

**A** I don't know that that's necessarily correct. I mean, the v-fib is an uncoordinated

beating of the heart in and of itself.

**Q** I was saying interfering with the coordinated heart beat?

**A** It depends on whether it's -- you have sufficient incoordination to lead to v-fib. You can certainly have all kinds of heart rhythm disturbances that don't lead to v-fib.

**Q** What's the most common things to cause a heart rhythm disturbance?

**A** I mean, it depends on how you define disturbance. Just getting excited can disturb your heart. It beats faster.

**Q** How about where the rhythm is off?

**A** I don't know what the most common is.

**Q** Would you agree that a cardiac electrophysiologist would know, should no?

**A** Cardiologists, I'm not sure. Usually the cardiac electrophysiologist by the time somebody gets to them, something other than just very minor is going on, so cardiologist. And, so yeah, cardiac electrophysiologist or cardiologist, they should know, yeah.

**Q** Have you written any peer-reviewed articles related to heart function?

**A** To function, no. To sudden death related to

the heart, yes.

**Q** But you haven't written any peer-reviewed articles related to heart function?

**A** I mean, other than the fact when it doesn't function, but as far as how it normally functions, no.

**Q** You don't treat patients for heart problems, correct?

**A** You know, I do look at heart biopsies from mostly transplant patients or patients in heart failure to try to figure out why they're having problems or if they're going to have problems, but as far as seeing living patients and ordering diagnostic tests and treating them, no, I don't.

**Q** You don't treat heart problems?

**A** No, I don't.

**Q** What kind of a specialist treats heart rhythm problems?

**A** Internist is probably the most common and then, if they're having problems, probably a general cardiologist and then maybe a cardiac electrophysiologist.

**Q** Is that the order of expertise?

**A** That's the order of more sophistication probably, yeah.

Q And you don't perform surgeries to treat heart conditions, is that correct?
A Correct.
Q From a cardiac electrophysiological standpoint, can you describe to me the mechanism by which a human heart is paced into sinus rhythm after it's in v-fib?
A Usually you deliver an electrical shock to the heart which restores the rhythm. It's called defibrillation.
Q Can you describe how a human heart is paced out of sinus rhythm and into v-fib?
A In the cardiac cath lab they administer electricity to the heart with electricity or usually in the heart although you can do transthoracic.
Q Okay. So when they are wanting to get the heart into v-fib, they do it by electricity?
A Usually, yeah.
Q Okay. Do you agree that v-fib is the signature heart rhythm found on a monitor after an electrical insult to the heart?
A For what we usually see with common electrocutions, yes, it is. For things like lightening, no, but that's not really an issue here, but that's the rhythm you would expect, electrically

induced.

**Q** Do you agree that v-fib is the most likely heart rhythm to be found on a monitor after a cardiac capture?

**A** After capture, no.

**Q** You don't?

**A** No.

**Q** Have you had any training in the use of TASERs?

**A** Not formally, no.

**Q** Have you performed any studies involving TASERs?

**A** Some studies on the appearance of TASER injury under the microscope, yes.

**Q** Tell me about those.

**A** Looked at various biopsies from both the drive study and the probe deployments to see what the characteristics were both fresh and healing.

**Q** Have you published any articles?

**A** I have.

**Q** Can you -- do you have a list of those articles regarding TASERs?

**A** I don't know if I have a list. I can -- one is a book chapter in the atlas of -- I can't remember the name of the full name of the book. It

really has nothing to do with what we're doing here today. It describes, but then there's an article that I wrote about arrest-related deaths that's in Academic Forensic Pathology that discusses electronic-controlled devices.

**Q** Is that listed on your CV or your list --

**A** It's on my CV. Or it's on my CV yeah, if you want a copy, I'll give you a copy.

**Q** Okay. Do you understand that the TASER that was used on Jason Moore was the TASER X26?

**A** Yes.

**Q** And that was manufactured by TASER International?

**A** Presumably, yeah.

**Q** Which is the company that you're on their advisory board that we talked about before, correct?

**A** On their scientific advisory board, yes.

**Q** Did you know that the TASER X26 discharges 50,000-volts of electrical current on the first pulse of each cycle?

**A** The 50,000-volts is the air gap of voltage. That's not what is administered to a person.

**Q** But it produces the 50,000-volts?

**A** Through an air gap, yeah.

**Q** And that's what the literature says?

**A** Sure.

**Q** And then the volts that come after that, do you know what the voltage is on the pulses after that?

**A** The average delivers about 400. I think the literature reflects somewhere between 4- and 600 per pulse.

**Q** How many volts are there if you grab a 110 outlet?

**A** One-tenth.

**Q** Okay. So this would be over six times what you'd get from touching an outlet?

**A** I don't know. If you want to look at it that way, it's -- you can go out to the Magic House, and if you want to touch a million volts, you can do that.

**Q** Are you suggesting that four to six hundred volts of electricity is not harmful?

**A** It depends on what the charge is.

**Q** Are you --

**A** Well, you're looking at current charge. The voltage itself isn't what hurts you, it's the current, the charge. And I mention that million volts, because if you see those Van De Graaff generators that all the little kids touch and their

hair stands on end, that's a million volts and they're not getting hurt.

**Q** I read something about 1,200 and 1,400-volts, have you heard any of that associated with TASERs?

**A** No.

**Q** What's the charge with the TASER?

**A** Let's see, charge about 2.1-milliamps -- or, I'm sorry, that's charge, no not the current. The charge somewhere between 85 and 100 microcoulombs.

**Q** What's the charge from a 110 outlet?

**A** I think it's about 14 amps. Oh, I'm sorry, that's the current. The charge I would have to figure it out. I don't remember what it is.

**Q** Would you agree that this isn't your area of expertise, electrical physics?

**A** I'm not an expert in it. Yeah, I understand the basics of it, but I'm not a physicist.

**Q** So you're not going to dispute the literature from TASER International that says that the first volts -- volt produces 50,000-volt charge, is that correct?

**A** That's the -- well, voltage isn't charge, but the voltage is that's the air gap.

**Q** But their literature is correct in what it

states, correct?

**A** As far as I know, yeah, you can get 50,000-volts.

**Q** Okay. And was there a burn mark on Mr. Moore's chest where one of the TASER probes was in his chest?

**A** You know it was described as that. I'm not sure that it was really a burn or whether it was just an abrasion from the hub striking.

**Q** So do you think the St. Louis County Coroner made a mistake on that?

**A** I mean, I haven't seen any microscopic slides of it and I don't think I've seen a high quality photograph of it.

**Q** Is there any reason for you to doubt his finding?

**A** Not particularly. I mean, it's irrelevant either way.

**Q** Well, I mean, we're talking about how powerful the charge are, so I just thought well if it burned his skin and it left a big burn mark on his chest, I thought that might be relevant.

**A** Well, there's certainly no big burn mark on the chest. There's what looks like either an abrasion or there could be a little burning of the

epidermis, but that's neither here nor there.

**Q** That's not important?

**A** That's not so important.

**Q** Okay. What's more important is that he's deceased.

Would you agree with that?

**A** Yes.

**Q** Have you read any studies on a person's ability to comprehend verbal commands while they are receiving electrical shock to their body from a TASER X26?

**A** During, no.

**Q** So you have no reason to dispute that, if police experts that have conducted studies testified that it's very difficult to understand verbal commands while you are under TASER load, you wouldn't have any reason to dispute that?

**A** I'd have to see the studies.

**Q** But as you sit here right now, you have no reason to dispute it?

**A** I don't have any basis to agree or disagree with it.

**Q** Well, you're a doctor and you deal with police custody cases and deaths and you're an adviser for TASER, so I'm assuming that you have a

lot more knowledge than the average person does, and with your involvement in these types of cases for 15 to 30 years, I just thought it was a relevant question to ask and with everything that you have, all the knowledge that you've acquired at this point, there is nothing there to dispute that statement I made, is there?

MS. SHAFAIE: Object to form.

**A** I would have to see what studies you're talking about and see what they say.

**Q** (By Mr. Floyd) Just the conclusion, that while an individual is under load from a TASER X26, that it's very difficult for them to understand verbal commands?

**A** I'm not sure that that's necessarily correct. I mean, I certainly could understand everything going on while I was tasered.

**Q** You don't want to agree with that?

**A** I mean, from my persona perspective as I knew what was going on when I was getting tasered.

**Q** Were people making statements to you and talking to you while you were being tasered?

**A** I don't know if they were talking to me, but I certainly knew exactly what was going on.

**Q** But you weren't -- you weren't tested where

someone made verbal statements to you or read numbers or gave you commands and then afterwards asked you to repeat what those were?

**A** That's correct.

**Q** You weren't in a scientific test, correct?

**A** That's correct.

**Q** Okay. And you're not trying to say that that stands for some type of proposition as to what you can and can't understand on a verbal command while you are under a TASER X26 load?

MS. SHAFAIE: Form.

**A** Right. You have to look at the science.

**Q** (By Mr. Floyd) Particularly, if someone is already in an emotional agitated state, correct? That would be different than the state that you were in when you were tased?

**A** Yes, I was definitely not in agitated delirium.

**Q** And are you aware of any studies where people who have been in an agitated delirium state have been tased in the chest with a TASER?

**A** Studies?

**Q** Yes.

**A** No, you could never do that.

**Q** Okay. But there are no studies like that,

are there?

**A** Well, you could never do a study like that.

**Q** Whether you could or couldn't, there just are none, correct?

**A** Yeah. I mean, you couldn't and there are none.

**Q** And I always like to say, when we talk about studies, it's kind of like polls, you know, comparing apples and oranges. If you take a healthy, relaxed or even mildly fatigued person and you tase them and say, look there, he did just fine. I tased him in the leg, I tased him in the back, versus take someone who is in the condition that you've described excited delirium or agitated delirium with a chemical process going on their brain, they have anxiety, they're paranoid, you tase them in the chest over the heart and you hit them four times in rapid succession.

That's going to have a different effect on that individual potentially than it would on an otherwise healthy calm individual. Fair statement?

**A** No. You can't say it's going to have a different effect. You have to try to study it, but you can't say that it's going to have an effect.

**Q** But you don't have any studies one way or another on the proposition, do you?

**A** No. You certainly can't study agitated delirium patients in a formalized study and do anything to them. You will never have that until you get an animal model for the disease process or for the process, and so you have to extrapolate from other things.

**Q** You can theorize though, correct, without the studies?

**A** Theorizing doesn't do you any good. You've got to test it.

**Q** And getting to that point then let's go back to your report because you made a statement in your report that kind of maybe I thought that that's what you were suggesting. It was on page four of your report and you indicate that. It's the last sentence in the second paragraph.

"However the emotional response to sustaining a TASER discharge, notably the response to pain, is highly individualized and in some individuals could conceivably add to whatever emotional stress was already present," true?

**A** True.

**Q** Were you suggesting that that could in some

way contribute to someone in an agitated state dying?

**A** It's possible.

**Q** Okay. Which is sort of related to why I was asking that question about there are no tests on people with agitated delirium, correct, with tasing?

**A** Correct.

**Q** Okay. Did you read the report of Christine Keim, the forensic investigator?

**A** I don't know if I -- yeah, I probably did actually.

**Q** Okay. Pardon me while I go through.

First of all, do you know who Christine -- do you know Christine Keim?

**A** Peripherally. I mean, she's an investigator at the county office.

**Q** What is a forensic investigator?

**A** It's an investigator for the medical examiner's office.

**Q** Okay. And so can you tell me what she does?

**A** Collects information about death cases.

**Q** Okay. And who pays her?

**A** St. Louis County.

**Q** Do you know what kind of credentials she needs to have that job?

**A** I don't know what her credentials are.

**Q** She documents statements that she took from Officer Ballard.

Did you see those statements?

**A** I don't recall.

**Q** I kind of highlighted -- let's see. I've kind of highlighted the section. We don't have to read it out. I just want you to look at it first.

**A** Okay.

**Q** I'll give you a second to look at it. That's the only portion. There might be a little bit on the next page. That's the only portion I'm going to ask you about.

**A** Okay.

**Q** So she gives a statement. Let's see. She says, "I contacted Ferguson Police and talked with Lieutenant Ballard" and I'm reading from the St. Louis County Health Records from Christine Keim, that's K-E-I-M, forensic investigator, and I don't know if it's been marked as an exhibit yet, but there's an affidavit attached. We can attach it to this deposition as exhibit -- do you guys know what number we're on? Exhibit 1 of this deposition.

(Exhibit 1 was marked for identification by the court

reporter.)

**Q** (By Mr. Floyd) Okay. On the first page, "I contacted Ferguson Police and I talked with Lieutenant Ballard who gave me the following account of his officers encounters with the decedent. At approximately 6:46 a.m., the Ferguson Police Department received numerous 911 calls reporting a black male nude in the area of Hennequin and Airport Road running in the street. Officers responded and found the decedent in the middle of the intersection. As the first officer was getting out of his patrol car, he heard the decedent yelling God is good, glory to God, I am Jesus. The decedent then charged at the officer swinging his arms and his hands were in fists. The officer pulled his TASER, tased the decedent, the decedent fell to the ground. The TASER lasted approximately five seconds. The decedent got up." I'm assuming she means stood on his feet. "And started towards the officer again. The Officer activated his TASER again and the decedent went to the ground. The decedent got up a third time and started at the officer again and the officer activated his TASER. The decedent fell face down this time and stayed down."

Okay. So I wanted to talk to you about that history because there are different histories in here, but this is a history that was given, I suppose, on the night of the event and it's from Officer Ballard and he's recounting what other officers told him and it's close in proximity, and I'm just wanting to compare those statements to maybe some facts that we have, okay?

**A** Okay.

**Q** Okay. And a couple of things that caught my attention were that, first of all, without any provocation, it appears that the history they gave is that Mr. Moore just charged the officer, but we've seen Officer Kaminiski's notes that he saw Mr. Moore standing in a parking lot and he made the first contact with Officer Moore (sic) and told him to put his hands up, come towards him or get down or he gave him some commands and it was after that that Mr. Moore reacted.

Is that what you remember from the police report?

**A** Yes.

**Q** Okay. And then the other thing that caught me is that she describes that Officer Kaminski tases Mr. Moore, knocks him to the ground and then Mr.

Moore gets up and charges him.

I don't ever remember Kaminiski ever saying that Mr. Moore got up and charged him, but that's what she says there, correct? She said that happened twice?

**A** Yes.

**Q** Okay. So with that in mind, Officer Kaminiski also testified in his deposition that he understands the law to be that he's not allowed to give somebody, you know, to apply force to somebody without having a legal justification, so after the first tase he said the guy charged me, Mr. Moore charged me so I tased him, but before I gave him that second tase, I gave him commands to stay down, stay down and it's in the deposition. He says he gave him multiple commands to stay down and that there was a gap in between the first tase and the second and a gap between the second and third and so forth.

But in this one it's a little different history given early on and I just want to make sure because I wouldn't want this history being presented without being vetted out to see if it's realistic or not because it's different, and I think the jury needs to hear about all histories to

determine, you know, if there is something wrong with them, or if there is, why. And in this situation she's describing Mr. Moore getting up and charging, and I want to bring your attention to something that we acquired which I know you've seen and it's the TASER download. Have you seen that?

MS. SHAFAIE: Object to form and foundation on that prior narrative.

**Q** Do you have a -- did you -- do you have a copy of the TASER download?

**A** No, not that I can put my hands on.

**Q** I think in your notes you had the notes of it. I think I saw in your notes you had the notes with the timing on it.

**A** Right.

**Q** Okay. So let me see if I have it here. I'm looking for the one that had the TASER. Okay. I'm going to hand you what's been marked as Plaintiff's Exhibit 36. This is from TASER International, and I guess this is where I got the, you know, the 1,400 to 2,520-volts. Take a look at that first page and we will hit two issues here.

Does that help you in understanding what the peak load --

**A** The peak load and main phase voltage?

**Q** Yeah. It's 1,400 to 2,520 volts.

**A** Right. Those are the specifications.

**Q** And pulse rate gives 16-1/2 to 20 pulses per second?

**A** That's what the specs are. I think it's -- it should be 19 pulses per second.

**Q** Okay. And then let's move on to the other page which is, I guess, it says it's page 1 of 36. It's really like three pages into it. It indicates when it gets into the download, it's talking about the activation log and download analysis, and I understand that this is actually some type of a computer chip in the weapon itself that keeps a record in sequence of when the gun was discharged, how many volts it let out, how long it was discharged, and how much time there was in between the last discharge and the next discharge, is that accurate.

**A** It can't tell you how many volts a particular person got, at least with the current -- or with the technology back then, but it does tell you what the output of the device is when the trigger was pulled using the internal clock which may not be accurate or synchronized with everything else, and then how long the duration of the

discharge, but it doesn't tell you at least in the older stuff whether it was actually current flowing through the probes.

**Q** And let's be clear about the accuracy statement. The clock, I indicate that it says it can have some floating or something, but when it says that there was a -- that when it says that the blast was five seconds, or there was one second in between the tase, now that information doesn't have any accuracy problems, does it?

**A** That's correct.

**Q** Okay. Now, there is also, and I know with your involvement with TASER, I'm assuming you're familiar with this that the activation durations recorded in the activation logs are rounded up to the next second after ten milliseconds.

Do you understand that?

**A** Yes.

**Q** Tell me what you understand about that.

**A** Basically, if you say it's five seconds, it actually may be 4 point something seconds.

**Q** Okay. And if there's a second in between the tases, let's say that Mr. --Officer Kaminiski tases Mr. Moore and it says that he's got a five or six second tase, and then the next tase it says

there's a second in between that tase and the next one. That would mean that's the most that there could have been in between, correct? Because if it was a half a second in between the tases, it would have just rounded it up to a second?

**A** No. It could be a little over a second actually, because it --

**Q** And then it would round it up to two seconds.

**A** No, not if you're within the before the rounding up period comes over.

**Q** That's only one millisecond.

**A** Well, nevertheless theoretically, it could still be for realistically it could still be a second. It doesn't have to be less than that.

**Q** Okay. But it could be less than a second?

**A** It could be less than a second.

**Q** More likely less than a second than more than a second according to odds, figures and numbers and math?

**A** I mean, when you look at a particular case, you can't tell.

**Q** Okay. But you would agree that, if there was a half second in between the first tase and second tase, that this device is going to round it

up to a second?

**A** That's my understanding.

**Q** Okay. So let's take a look at the actual download then which is on page two of it and it shows, and I know you've review this.

It was in your notes and you're familiar with this, correct?

**A** Yes.

**Q** And you know how to interpret it, correct?

**A** I think I do.

**Q** Okay. So how long was the, you know, there was the warmup which is line 947. That's when he I guess was at work and they sparked it in the parking lot. He testified to that.

For the record, can you say yes? I know you nodded.

**A** Okay. Yes.

**Q** And then on line 948 it indicates that it was 6:53:17.

How long of duration was that tase?

**A** Realistically, probably five seconds.

**Q** It says six seconds.

**A** It does, but again, it's probably rounding, because when you actually look at the time, six seconds doesn't fit.

**Q** It was probably 5.1 or something, correct?

**A** I don't think you can say that. At least, it's somewhere right around 5.

**Q** But then when does the next tase start? How much time is there between that tase and the next tase?

**A** Five seconds.

**Q** Okay. So that tase starts at 6:53:17 and it goes for six seconds, but there's five seconds till the next one, correct?

**A** That's why I say it probably didn't go for 6 seconds. It probably went for 5 seconds, or a little under 5 seconds.

**Q** So looking at this download, how much time was there from the end of the first tase, until the second tase again?

**A** Basically, it was sequential.

**Q** So he didn't stop at all, he just kept going?

**A** He stopped because it doesn't indicate -- it indicates a second discharge, not a continuous discharge. But it looks like the output was consecutive, but if he would have released the trigger, he would still get a five-second burst. So it may have been four seconds after he pulled the

trigger before he pulled it again.

Because, if you pull the trigger once, you get a five-second discharge.

**Q** Yes.

**A** And release it right away. And so, if then four seconds later he pulled it again, it's going to look like it started right after this one, although the time sequence where the trigger is released could be another -- could be four seconds.

**Q** I'm asking from the time that he gave him the first tase and that tase ends, how much time elapsed before the second load starts?

**A** It's almost continuous.

**Q** Almost continuous?

**A** Although it's not continuous, it's almost continuous.

**Q** So it's almost continuous which means there's hardly any time in between the first tase and when that one ends and the second one starts, they're almost like rapid succession back to back, fair statement?

**A** That's what this would indicate, yes.

**Q** And this is from a computer, correct, from the computer chip?

**A** From the chip, yeah.

**Q** Okay. Now, I bring you back to the statement from Christine Keim. She describes that Mr. Moore was tased, he hit the ground, he got back up. Says he got up and started charging him again. I mean, that seems unlikely if he had two back to back tases, doesn't it? That would have to assume that Mr. Moore was able to get up and stand while under load?

**A** Yes.

**Q** And that's very unlikely, isn't it?

**A** At least what was described, yeah, it is.

**Q** Very unlikely?

**A** Yeah. If, in fact, the description of him locking up and falling is true, then it's very unlikely that it happened like this as in this report.

**Q** So as a pathologist and a guy who solves factual disputes as a living, you would have to say that you've got to call into suspect that history that's in that forensic investigator's report that works for St. Louis County, correct?

**A** The details of it, yes.

**Q** Okay. Then we move on to second. We're into the second tase. He's already been hit once and now he's -- now we're into -- we talked about

the second one.

Now that second tase ends. How long is that second tase?

**A** Five seconds.

**Q** And then how much time is there between when that second five -- you know, that second, five-second load ends before the third one starts?

**A** A second.

**Q** One second. Now, are you familiar with the studies that measure when an officer makes the decision that he's got to pull the trigger from the time that he decides to pull the trigger, it's the reaction time and the time for the device to work when you pull the trigger before it starts to measure the electricity coming out.

Are you familiar with that study?

**A** No.

**Q** It says it's about a third of a second.

**A** Okay.

**Q** Okay. So I want you to assume that there will be evidence in the case of this. If I'm wrong, I'm wrong and we'll deal with it, but I don't think I am.

But let's assume then, that when Officer Kaminiski decides I need to pull the trigger

again. That, from the time he makes that decision, he burns up a third of a second. So, if there's only a second in between the second tase and the third tase, and if it took him a third of a second to decide to pull the trigger to get a start, that would mean that he had two-thirds of a second to decide what to do, to decide whether from the end of the second tase until the beginning of the third, he had two-thirds of a second to decide either I'm going to pull this trigger or I'm not and he decided I'm going to pull it.

**A** No. He had -- basically, he had almost five seconds.

**Q** Oh, you're saying that's because while he's under load he's watching him. I'm saying between the time the load ended because the guy is locked down on the ground.

**A** If that's what's described, that's correct.

**Q** Mr. Moore is on the ground shaking in convulsions from the electrical pulse?

**A** No. There is no evidence of that.

**Q** Well, that's what Mr. Kaminiski testified to?

**A** Of convulsions?

**Q** Well, that he's --

**A** There is no --

**Q** He said he was flopping around on the ground.

**A** That's not convulsions. That's just muscular contractions.

**Q** Well muscular contractions. Well, I didn't mean to mis-describe it medically as like a brain seizure or something, but he was -- contractions. He was moving around on the ground as a results of the effect of the electricity going through him.

So his determination to pull the trigger a second time is after the second tase is ended and before the third one started there was one second?

**A** Well, theoretically, he could have decided earlier, so he has basically a five-second window there.

**Q** Sure. What's he basing it on then? There's a gentleman on the ground under load bouncing around from the electrical contractions.

What information is he processing that's telling him whether he needs to pull the trigger or not?

MS. SHAFAIE: Form and foundation.

**A** You would have to ask him that. But you're

asking me what the time sequence is and there's a five-second interval in there where he potentially could pull the trigger again.

**Q** I did ask him and that's why I'm asking you. Because what he told me in his deposition is that I gave Mr. Moore multiple verbal warnings after I ended the tase. I gave him multiple warnings to stay down, you're going to be tased. Stay down or you're going to be tased. He said, Mr. Moore began to get up and that's when I tased him again.

And I'm suggesting that, based upon this TASER download, I don't believe there was enough time for any of that that happened. Do you agree?

MS. SHAFAIE: Form.

**A** He had -- while he could have been giving him orders while he was under load.

**Q** He said they weren't under load, while he was not under load.

MS. SHAFAIE: Form, foundation.

**A** In that case I agree with you.

**Q** Okay. And we go into the fourth tase. Now we're getting into the fourth tase. Once again, it's a five-second tase with one second in between the tases.

Just pretty much like the other ones, correct?

**A** Yes.

**Q** Okay. Sure we can take a break.

VIDEOGRAPHER: Off the record at 3:24.

(Recess taken.)

VIDEOGRAPHER: Back on the record at 3:34 in the deposition of Dr. Michael Graham. This will begin disc two.

BY MR. FLOYD:

**Q** I want to talk to you a little bit about this load with the TASER and I -- where is that exhibit again? This was Exhibit 36 and you had looked at it and I had asked you about the pulse rate and TASER X26 says 16.5 to 20 pulses per second, but you said actually it should be, did you say 19?

**A** No. I think it's designed for 19 pulses per second, but the specs will allow some variance from that.

**Q** Okay.

**A** So as long as you are within spec, but I think theoretically it's 19 pulses per second.

**Q** Okay. So looking at this download, can you tell me, approximately, how many seconds Mr. Moore

was under load?

**A** You can't, because the -- back in this time period you can measure whether the device is in spec or not, you can measure whether the trigger was pulled, but you don't know how long somebody was under load. There was no way to measure that. They didn't measure delivery current.

**Q** Just assume that there was good contact?

**A** But the machine doesn't describe that. Now, if you want to assume that all of this electricity was delivered to him.

**Q** Yes.

**A** That there was actually delivery through the probes to him.

**Q** Yes.

**A** Then you're looking at probably 20 seconds, basically 20 seconds.

**Q** Okay. So how many pulses would he have received in those 20 seconds approximately?

**A** 19 times 20.

**Q** 380?

**A** Yeah, 380.

**Q** What is the relationship between the pulses and the contractions, muscle contractions?

**A** Right, yeah. The pulse rate is designed to

stimulate the nerves, and so it's not like a one-on-one situation where every time you get a pulse you get a contraction, it doesn't work that way.

You are trying to basically stimulate the nerve in the most efficient way possible, and that 19 pulses per second, give or take, is an efficient way to do that so it's not a strict correlation.

**Q** And I think that I asked Officer Kaminski this, but I'll ask you.

Have you ever seen like I think it's TASER promotional tape of I think it is the X26 Tasing at Texas longhorn bolt?

**A** No.

**Q** Have you ever heard of it?

**A** No.

**Q** Okay. I want to talk to you a little bit about the TASER warnings.

Are you familiar with the TASER warnings?

**A** Very generally. I'm not a warnings expert. I had nothing to do with formulating TASER warnings.

**Q** I want to ask you about them to some degree. Let's see how -- do you want the highlighted one to

make it easier? I have highlighted stuff that I wasn't going to use, but that's Exhibit 19. Do you need a copy of that? Okay.

Exhibit 19, and looking at the warnings, this is warnings that are produced by TASER International. Do you agree with that?

**A** Yes.

**Q** Important ECD product safety and health information. Okay. Moving into the second page, I wanted to know if you were aware and it talks about, it's the first highlighted section.

"Minimized, repeated, continuous or simultaneous exposures." And it states "Reasonable effort should be made to minimize the number of ECDs, ECD exposures, electrical conductive device," correct?

**A** Yes.

**Q** That's the TASER is what an ECD is, correct?

**A** A TASER is one type.

**Q** Yeah. But when they use ECD, that's what they're referring to? That would apply to the TASER X26?

**A** It applies to a variety of their devices included the X26.

**Q** Okay. And that "The user should use the

lowest number of ECD exposures that are objectively reasonable to accomplish lawful objectives and should assess the subject's resistance level before initiating or continuing exposure."

Did you see that warning?

**A** Yes.

**Q** Okay. And Officer Kaminiski has testified that he knew about them. He was a certified TASER trainer and had been for many years. So I want to ask you, looking at this statement here, and I don't know how far you've gotten into these issues with the cases you've testified on involving police deaths and custody, but there's a statement in here, number one, "They should minimize the number of loads that they deliver to someone."

But number two, "Try not to make them simultaneous."

And number three that "They should assess the subject's resistance level before initiating or continuing to give another load."

Did you see that?

**A** Yes.

**Q** Do you think that a second or less than a second is enough time to assess somebody's reaction to a load?

MS. SHAFAIE: Form and foundation.

**A** I would defer to the experts on use of force.

**Q** Okay. And it talks about sensitive body part hazard, it's the next portion that's probably underlined.

It says, "When possible, avoid intentionally targeting the ECD on sensitive areas of the body such as the head, throat, chest, breast or other pre-existing injury areas." Okay. Well, I want to focus on the chest part. This warning here says to avoid that area.

Do you agree with that warning?

**A** I don't think based upon what we know now, I don't think you need to intentionally avoid that, although the effectiveness of the device, if you go lower is more effective because you can incorporate the core muscles is what you really want to do. Targeting the chest you have less likelihood of stimulating the core muscles.

**Q** So you may disagree with TASER on this one because TASER says warning sensitive body part hazards?

**A** Again, I'm not a warnings expert. From a scientific standpoint from what we've written right

now, I don't think that -- that for me is not a big issue.

**Q** Okay. There's a warning here and here we're talking about I guess the force and whether the voltage is legitimate or not. I don't know how we want to phrase that or how to set that up, but on the next page eye injury hazard I have it highlighted.

"If a TASER probe, electrode or electrical discharge contacts or comes close, comes into close proximity of an eye, it could result in serious injury including permanent vision loss."

Were you aware that the TASER could cause that much damage?

**A** Well, yeah. If you stick a dart in somebody's eye, sure, it's going to be a big problem.

**Q** Even near the eye? It doesn't have to be in the eye?

**A** It's a suggestion that it would be in the orbit or something like that. So, yes, obviously it could cause problems.

**Q** Okay. And then we talk about these muscle contractions on the next page, and it indicates here that it can cause strong to moderate muscle

contractions. It goes on to state that it can cause fracture to the bones including compression fractures. It can cause tears of muscles, ligaments, tendons.

Were you aware that it could do all of that damage?

**A** I don't know about the compression fractures. I know that there's been some discussion about that, whether it really happens or not is not entirely clear but, sure, you are causing, you know, muscle contraction, you know, not anywhere near the maximum muscle contraction possible. Probably 40 percent or so of it, but yeah, that can cause sprains and things like that, sure.

**Q** Here it says that it can cause, I guess it's because -- it's because of the involuntary muscle contractions, right, that the TASER is causing?

**A** Well, you are not dealing with involuntary muscles. You're dealing with voluntary muscle contraction, but not volitional, and so I mean, even if it's a volitional muscle contraction, if you contract your muscle 40, 45 percent of its maximum, you can cause strains, especially if it's not stretched out or -- yeah.

**Q** But I've heard of cases where there's been

disc herniations and compression fractures and that's what's listed in this warning?

**A** Yeah. It's -- it's not clear to me whether the compression fractures are really related to this or not.

**Q** But TASER seems to think it's important enough to put in their warning?

**A** Well, again, I'm not a warnings expert, but a lot of things typically go into warnings.

**Q** This next one is of relative importance that I want to ask you about. It's the physiological or metabolic effects, and without using those words to confuse anybody, it says that "The ECD can produce physiologic or metabolic effects which include but are not limited to" and then I go to the part that I was focusing on heart rate and rhythm.

Did you see that?

**A** I did.

**Q** TASER is giving a warning that the ECD can produce physiological or metabolic effects which include but are not related to heart rate and rhythm. Do you agree with that?

**A** Yeah, it can certainly change your rate.

**Q** And rhythm?

**A** I'm not sure about the rhythm part.

**Q** So you would -- so you're disagreeing with TASER's own warning then?

**A** Again, it's a warning and I'm not a warnings expert, but a lot of things go into warnings that the science may not entirely support.

**Q** Okay. But I just -- I mean, I thought it was important because you've testified here that you don't believe that a TASER can affect heart rhythm. You've acknowledged that there are other experts that disagree with you and now I wanted to point out that even TASER International has given a warning not to shoot the chest and that it can cause a heart rhythm problem?

MS. SHAFAIE: Form and foundation.

**Q** (By Mr. Floyd) Do you agree with these warnings in there?

MS. SHAFAIE: Same objection.

**A** Let me go back to your first statement. I have never said that the TASER cannot at least theoretically cause changes in heart rhythm.

**Q** Okay.

**A** I said that it can.

**Q** Okay. Well then you're on record that it can then.

**A** But under normal usage and under a normal

size individual, it has not been shown to do so, but theoretically, I think I said earlier on in this deposition that you potentially could.

**Q** Then we go on to the -- just so that I'm clear that we have a record of this, you're on record of acknowledging that the TASER can affect the heart rhythm?

**A** It theoretically can. Whether it actually does in practice has not been shown to do so, but it theoretically can, yes.

**Q** Of course, Dr. Zipes would disagree with you on that statement you just made, wouldn't he?

**A** You have to ask Dr. Zipes.

**Q** Okay. But you've read his articles?

**A** I've read his articles.

**Q** And they disagree with that statement you made?

**A** I'd have to read exactly how he has it written, but yeah, he believes it can.

**Q** Okay. Then we go on to the higher-risk population. What I wanted to point out here is it says that the ECD use on and it talks about different types of people and we'll skip pregnant, infirmed, elderly, small child but it says low body mass index, BMI.

And it goes to say that the "ECD should not be used on members of these populations unless the situation justifies possible higher risk of death or serious injury." Okay.

So TASER is warning that, if you use -- and because I understand they are warning that, if you use a TASER on somebody that has a low body mass index, that you really shouldn't be doing it unless the situation justifies a higher risk of death or serious injury. Did you see that?

MS. SHAFAIE: Form and foundation.

**A** It doesn't say that it does increase the risk of death. It said it could.

**Q** (By Mr. Floyd) And it says --

**A** Let me finish. Hang on. And the reason they say it could is based on theoretic considerations and the sentence says it has not been tested on these populations. But again, it says it can be used if the situation justifies it.

**Q** And I want to ask you about that, low body mass index. That's basically -- we do that formula by somebody's height and weight, correct?

**A** Yes.

**Q** And Mr. Moore, according to the death certificate, had him listed at 72-inches long?

**A** I don't remember how tall he was, but he was like 130 pounds. I mean, he's a skinny guy.

**Q** And the body mass index was somewhere around 18 which is below normal, it's low. It's under weight from what I looked up?

**A** I guess it depends on what table you use, but he's a skinny guy.

**Q** I think I used the government's statistics and they said it was underweight. So now, and I want to ask you about that. You know, we've got -- and I mention it because, you know, we've got some of these warnings, you know, maybe you don't agree with them, but maybe there's going to be some other people in this case that do, but if you tase somebody in the chest, you're getting it in the area near the heart, and if someone is of slight build, and you've referenced this a bit in your report and I think you know where I'm going. If someone is of a slight build and they're shot in their chest, the thinner built they are, the more likelihood that that dart could potentially, if it's shot in the right spot, could get closer to the heart.

Do you agree?

**A** Yes.

**Q** And if someone is naked, they don't have a

layer of clothing to prevent that dart from going in, correct?

**A** I mean, thin clothing -- thin clothing probably doesn't make a whole heck of a lot of difference. But a skinny guy you can get the probe tip closer to the heart than you can the bigger guy.

**Q** And then let's say, and I've read some things on this and I would just kind of like your thoughts on it, other people probably comment on it and you've probably read some of these articles.

But when an individual gets shot in the chest with the dart and they fall flat down on their chest, that I've read some articles where experts have said that that can cause the darts to actually penetrate deeper into the chest to get closer to the heart.

Do you agree with that?

**A** It's never been shown. Theoretically, that could happen, but that so far hasn't been tested yet. Whether that really occurs or not, I don't think anybody knows.

**Q** You've read probably some of the same stuff I have then. You seen that out in the literature?

**A** I've heard it. I don't know that I've seen any data that would indicate that.

**Q** The other aspect of that is that, when somebody falls flat on their chest, is that -- the literature I read is that the heart can move around inside the chest cavity to some degree and that when you're laying on your chest that the heart moves closer to the chest wall which makes it closer to the dart again.

So it's two factors. One, when you're on your chest, the heart is dropping closer to the chest wall. And number two, the prong is being driven into the chest deeper making the proximity between the dart and the heart even closer.

Do you agree with that?

**A** The latter part has not been shown that the dart is driven in deeper. I think it's generally recognized that, if you're laying flat down, the heart does move forward a little bit.

**Q** Which would -- if the dart gets driven in further and if the heart gets moved closer to the chest in that position, that increases the likelihood of the TASER electrical current interfering with heart rhythm?

**A** Only if you're within probably less than 5 millimeters of the heart.

**Q** Others would disagree with you on that distance, correct?

**A** I don't know if that's true or not.

**Q** Your testimony is that the dart has to be within five millimeters of the heart to cause --

**A** It's probably got to be within three or four in a human because v-fib.

**Q** Would you be surprised if a cardiac electrophysiologist were able to effect a heart rhythm with electrical pulse from further distances than that?

**A** Well, it depends upon how much charge you are delivering. I mean, you can do transcutaneous pacing, you can do -- obviously, you can do transcutaneous defibrillations, but that's a huge amount of charge. We're talking about, you know, 100 microcoulombs or less, and so I would be surprised if somebody could do transcutaneous changes in heart rhythm with 100 microcoulombs.

**Q** Did you state in your report that -- you didn't give the number of 5 millimeters in your report, did you?

**A** What I gave is what has been seen in pigs and things.

**Q** Which was 23 millimeters?

**A** Per capture. For fibrillation that's about eight.

**Q** But for cardiac capture?

**A** Oh, for capture, yeah, it's about an inch in a pig. There's been a human captured about 17 millimeters, but no non-perfusing rhythms. So for v-fib you're looking at, you know, if the average pig that you can even fibrillate is 6 millimeters, you know, then you're looking, you know, maybe two-thirds of that, so about 4 millimeters.

**Q** And looking at your report, you indicated that Dr. Sabharwal noted that there was a 7-millimeter circular burn with a central puncture on the left anterior chest, correct?

**A** Right. That's from the probe in the hub on the skin.

**Q** How close in proximity is that to the heart?

**A** Oh, in this case it's over an inch. I mean, he measured the skin and fat was 7 millimeters. Chest wall muscle was 15, the intercostal was 10. It's well over an inch.

**Q** Okay. But we don't know how deep the probe went into the skin, do we?

**A** We do. Because if you do have the circular

abrasion, that means it went into the hub and so it's in 9 millimeters.

**Q** Do you know how long this probe was on this dart?

**A** I don't know if this was the 9 or the 13-millimeter probe. Let me see if it's got anything in here.

MR. DOWD: .55 inches.

THE WITNESS: No. The probe is not five inches long.

MR. DOWD: .55. It's slightly over a half an inch.

THE WITNESS: So it's the 13-millimeter dart, the extended dart.

**Q** (By Mr. Floyd) So we've got a probe that's over a half inch long going into his chest?

**A** Yeah.

**Q** We've got him driven into the ground and we've got the chest dropping down close -- the heart dropping down closer to the chest cavity as he's on his chest.

MS. SHAFAIE: Object to form and foundation.

**A** So you don't know actually if the probe is driven in. You've got --

**Q** (By Mr. Floyd) Well, we've got the burn

marks and the 7 millimeters which you indicate.
**A** Yeah. It means it's into the hub which is what you typically see.
**Q** Full depth?
**A** Yeah, 13 millimeters, and so you're still almost 20 millimeters away from the heart.
**Q** But as that -- you put pressure on it, it could press through some of the fat just like I can stick my finger on my chest, I can press deeper into it?
**A** He hasn't shown any wound track that is deeper than that though. I mean, you're guessing. You have no science to show that.
**Q** It's theory. Other doctors have theorized that.
**A** You can theorize all you want, but there's no evidence to support it.
**Q** In any event, we have a large probe. Are you able to do the measurements of how close that probe would have been to his heart if he was laying on his chest and the heart dropping down?
**A** 32 millimeters, 19 millimeters.
**Q** And how did you do that math?
**A** 32 minus 13.
**Q** And the 32 came from the depth?

**A** The measurement inside the wall. So the chest wall --

**Q** And that's assuming that the dart didn't penetrate any deeper when he got pressed onto the ground, correct?

**A** And it also doesn't allow for the heart being away from the sternum at all either. So, it's actually probably longer than that.

**Q** And where did you deduct the 19?

I mean, where did you deduct the 13 from the millimeters?

**A** Like you said, it's a 13-millimeter probe.

**Q** And I believe that you testified that a discharge -- you were referencing studies that indicate that there were cardiac capture within 23 millimeters on swine, correct?

**A** Yes.

**Q** And pigs are commonly used to test products for safety for humans, correct?

**A** Not so much for safety. Pigs are so easy to fibrillate. They're not really -- they use them because they are easy to fibrillate. To fibrillate a pig, the average heart to heart distance was six millimeters and they can't get big pigs to fibrillate at all without manipulating them.

**Q** And don't you have pig valves that have been used in humans, is that correct? Pig heart valves?

**A** Yeah, tissue from pig heart valves, sure, yeah. It's got nothing to do with this.

**Q** Okay. Now, there are some other warnings that TASER has given and I won't go through the documents to add more on here, I'll just ask you if you know about them. They've already been put into evidence in other depositions. I've got the documents here, but in order to save some time, that the statements were that an increased risk of death when used on a person with -- well, just strike that.

Physiological or metabolically-compromised persons at risk of death when they're tased with a TASER. It increases their risk of injury or death.

Do you agree with that or not?

**A** That's not been shown, no.

**Q** Okay. So then I'll just go to this statement here. I guess it's the physiologically and metabolically compromised person. It is on that Exhibit.

**A** Yeah, I got it.

**Q** I have it highlighted. It says, "Law

enforcement personnel are called upon to deal with individuals in crisis that are often physiologically or metabolically compromised and may be susceptible to arrest-related deaths. The factors that may increase susceptibility for arrest-related deaths have not been fully characterized but may include" and then you state it and it states in here "Agitated or excited delirium." And there's other warnings that state just emotionally distressed.

And you would agree that that warning is given by TASER?

**A** I don't see anything about it just being emotionally distressed in here.

**Q** That's in other warnings. They're in evidence. It's on another document.

**A** Yeah, it's not in this one, but agitated delirium certainly we recognize that those individuals are subject to sudden death often temporally related to forcible restraint.

**Q** Or being shot with a TASER multiple times?

**A** It's never really been shown to be increased incidents.

**Q** Then why give the warning?

MS. SHAFAIE: Object to foundation.

**A** You have to talk to the warnings experts.

**Q** (By Mr. Floyd) But they state on here that may cause or contribute to death or serious injury ECD use?

**A** What it says is that the factors that may increase susceptibility for any arrest-related death have not been fully characterized but may include and they give a whole laundry list of things. And just as a general statement for people subject to sudden death during arrest.

**Q** Are you saying that officers should disregard these warnings?

**A** I have nothing to say about warnings. I'm not a warnings expert.

**Q** Okay. Because my understanding is and you worked for TASER -- I mean, you worked for TASER and you're on their safety --

**A** I don't work for TASER. I'm on their scientific advisory board. I don't -- I'm not a TASER employee.

**Q** My understanding is that, if you're going to use a TASER, that TASER requires that you adhere to their warnings.

Is that your understanding?

**A** I don't know. I don't use TASER in my daily job. You'll have to talk to the business folks

about that.

**Q** Okay. Well, my understanding is that, if we read through this, I think even in this document 19 it probably states and I've read it on multiple occasions that they don't want you using this TASER if you're not going to follow these warnings?

MS. SHAFAIE: Form and foundation.

**Q** (By Mr. Floyd) Do you disagree with that?

MS. SHAFAIE: Same objection.

**Q** (By Mr. Floyd) But right on the top of the page, "These safety warnings are for your protection as well as the safety of others. Disregarding this information could result in death or serious injury."

You see that? It's the very first thing they state.

**A** Okay.

**Q** And the way I look at it, sometimes the first thing you state in a document is often the most important and that's what they've got listed as their first thing. Follow these instructions, or someone might die?

MS. SHAFAIE: Form.

**A** Yeah.

**Q** (By Mr. Floyd) We'll move on.

Do you agree that there's increased risk of death or injury if an individual is tased in the chest?

**A** From being tased in the chest, no.

**Q** Okay. Do you agree that there's increased risk of injury or death if someone is tased multiple times?

**A** No.

**Q** And I think I've testified to this, but I wanted to ask you, did you know from the materials that you read that prior to tasing Mr. Moore that Officer Kaminiski had been a certified TASER instructor for many years?

**A** I think I read that.

**Q** And that he had trained other officers regarding the TASER warnings that we discussed in Exhibit 19?

**A** Well, if he was a trainer, I would assume so.

**Q** Okay. Was there a toxicology report or study performed in conjunction with the autopsy on Mr. Moore?

**A** Yes.

**Q** And am I correct in stating that that toxicology report was entirely negative for drugs or

alcohol?

**A** I think there was Lidocaine, but that was probably from resuscitation. Other than that, nothing that they tested for showed up.

**Q** Lidocaine would have been part of the treatment that he was receiving in the ambulance and the hospital?

**A** For the resuscitation, yes.

**Q** And there were no significant abnormalities of the myocardium, correct?

**A** No. It's bigger than it should be. He's 130 pounds and he had a 400-gram heart. That's too big.

**Q** But Dr. Sabharwal said there were no significant findings. So you two disagree on the significance --

**A** That's why I've asked to look at the slides.

**Q** Okay. That scenario that you disagree on, he didn't find it to be significant?

**A** I have to look at the slides and I can tell you.

**Q** And right now --

**A** Right now I am suspicious that it was not normal because that is just too much heart weight for a 134 pound guy.

**Q** Okay. You indicated that the -- there was increase in the left --

**A** Ventricle.

**Q** -- ventricle, and my readings on that indicated that it was just slightly large?

**A** 400 grams is pretty big for somebody that's only 130 pounds.

**Q** Well, I mean, the left ventricle I think it was 13 millimeters?

**A** Well, but you don't look at that. It's the heart weight actually is more important.

**Q** Okay. And you would agree that there are many, many people walking around in the streets that have enlarged hearts or other problems, you know, clogged arteries, hardened arteries.

You agree, right?

**A** Yes.

**Q** And it would be completely irresponsible for any police officer to assume that everybody that he's preparing to tase has a completely healthy heart. Do you agree?

MS. SHAFAIE: Form and foundation.

**A** Yeah. I don't think that you can try to assess somebody's overall health in a situation like this.

**Q** But you have to realize that the general public is susceptible to heart susceptibilities?

**A** You know actually in the population that the police officers are most commonly asked to get involved with where there is the potential for forcible strength, those usually healthy people because you're not dealing with the older population generally. You're dealing with young people and most of them are healthy. I mean, officers usually aren't going around wrestling 70-year old, 75-year old guys.

**Q** Yeah. But the young --

**A** The young --

**Q** How about in the 30's and 40's?

**A** Yeah, but the -- you know, the probability is, when you're dealing with somebody in a young age, they are going to be normal. You can't categorically say they are going to be normal. There is a chance that they will be abnormal, but it's really not very big. I mean, most 20-year old guys are healthy.

**Q** I think we'll have to challenge that to an extent that, are you telling this jury that police officers don't need to worry about potential underlying heart conditions because they are only

dealing with youth and young people?

**A** No. I didn't say that at all. I said there is potential there, but it's a very, very small potential. The vast majority of people walking around in their teens and early twenties are healthy. If they look healthy, most of them are healthy.

**Q** And --

**A** But not everybody.

**Q** Not everybody. And many of the cases that I've read in Federal courts regarding TASERs did involve people that were older than Mr. Moore?

**A** Correct. But still most of them are fairly young.

**Q** But the bottom line is, is that we have to -- police officers should assume -- you don't know. I've got a friend that's in his 30s and had a pacemaker put in and you know that happens at that young of an age, correct?

MS. SHAFAIE: Form and foundation.

**A** Sure.

**Q** Correct?

**A** Yes.

**Q** Okay. So these police officers have to realize that this weapon, it's a great tool in most

situations, but in some situations it can be very dangerous. Do you agree?

MS. SHAFAIE: Same objection.

**A** I don't think it's very dangerous. There are complications that can arise from tasing people, the biggest one is falling down and hitting your head uncontrolled, falling off heights, being around flammables. All of that's recognized. I mean if -- the bottom line is these are great tools, as you said, but they have to be used appropriately.

**Q** (By Mr. Floyd) Great. And I want to ask you this.

Do you agree that it's never appropriate for an officer to use force on an individual that's not necessary?

MS. SHAFAIE: Form and foundation.

**A** If the officer thinks it's necessary, then I think he's warranted to use force.

**Q** (By Mr. Floyd) If he reasonably knows that, it shouldn't be necessary?

MS. SHAFAIE: Same objection.

**A** If he -- yeah, if he thinks that force isn't needed and he uses force, then yeah, I don't think that's appropriate.

**Q** (By Mr. Floyd) It's not appropriate for an

officer just to disregard an individual's safety and say, you know what, I'm going to make my job easier. I'm going to disregard his safety, it will expose him to some risks, but I'm going to do it.

You don't agree with that philosophy, do you?

MS. SHAFAIE: Same objections.

**A** I mean, obviously, officers do things that they know are not safe to people like they shoot them occasionally.

**Q** (By Mr. Floyd) When it's not necessary, though?

**A** Yeah. They shouldn't do things that are not necessary.

**Q** We covered some of this already, so I'm skipping it. Okay. We've talked about cardiac capture and v-fib.

Do you agree that v-fib occurs when the heart's electrical rhythm is knocked out of sequence and the heart isn't pumping blood?

**A** That's -- not necessarily. In some cases it does. Once you're in v-fib, then your heart is not pumping blood.

**Q** Okay. But you agree that v-fib occurs when the heart's rhythm is out of sequence?

**A** No. No. There are lots of different rhythm disturbances other than v-fib that can occur. But V-fib is one of the rhythm disturbances where the heart is no longer pumping in a coordinated fashion.

**Q** Okay. So v-fib is when the heart is not pumping in a coordinated fashion and that's related to the heart rhythm?

**A** It's actually a lack of a rhythm.

**Q** Lack of a rhythm, okay.

**A** But it is a very particular type of an event. There are other abnormalities or lacks of rhythm where you're not pumping blood either, but just to say that the rhythm is off, therefore, it must be v-fib, that's not true.

**Q** And do you agree that v-fib can be detected on a heart monitor?

**A** Yes.

**Q** No question about that, is there?

**A** Assuming that it's probably working correct.

**Q** And when you explained excited delirium psychosis, you didn't mention v-fib, did you?

**A** In my report?

**Q** Yeah.

**A** Yeah, I did. I said usually you don't see it in that situation but you can.

**Q** But it's pretty rare, isn't it?
**A** It is unusual.
**Q** Okay. And you agree that an electrical shock can cause v-fib, correct?
**A** If there is enough charge there, yes.
**Q** But to be fair to you, you just don't believe that a TASER X26 is powerful enough to capture the heart's electrical pulse and throw it out of rhythm? I've probably butchered that in layman's terms.
**A** You did. Let me -- I think if you get the darts or one of the darts close enough to the heart and discharge them, an X26, I think you can induce v-fib.
**Q** Okay. Do you agree that Moore's heart was in v-fib after he was tased four times?
**A** Eventually he was in v-fib. I think that is the rhythm that was identified but let me see. Yes.
**Q** Okay.
**A** He eventually went into v-fib.
**Q** And how many times was he in it?
**A** Oh, I don't think it matters. The only rhythm that's really important is the first rhythm, because once you start resuscitating and giving drugs, you can cause any kind of rhythms. It's the

initial rhythm that you're interested in.

**Q** So they tried to defibrillate and then he went back into v-fib?

**A** No, he went into asystole. He was in v-fib. They tried to defibrillate him and that put him into asystole.

**Q** And asystole, for the jury, that's flat line?

**A** Yes.

**Q** That's what a common person understands, correct?

**A** Yes.

**Q** That is where there is no pulse?

**A** Well, you don't have a pulse with v-fib either. You have no electrical activity with asystole.

**Q** It would be flat line?

**A** Yes.

**Q** And then they got him back into v-fib from flat line?

**A** You know, I didn't pay much attention to it after that. It really doesn't matter.

**Q** Okay. Didn't you note in your report that Officer White reported he cuffed Moore while Moore was receiving the fourth TASER load, and within

seconds of cuffing Mr. Moore, White noticed something was wrong with Moore?

**A** He said it could also have been a minute. It's unclear.

**Q** And I wanted to explore that a bit because we look at a Christian Hospital statement from the police department discussing tased was more than -- Moore was tased and then he became unresponsive. Let me see what I have here. And this is on -- I guess I should mark this as Exhibit 2. Do you want a copy of this item? I don't know if it's easier for to you read the highlight or not.

**A** Yes.

(Exhibit 2 was marked for identification by the court reporter.)

**Q** (By Mr. Floyd) And this is a record from Christian Hospital and it was on the evening of Mr. Moore's death. And reading at the top I think it says --

**A** I think this is the EMS report actually.

**Q** The EMS report. And it states that he arrived, that 317.

Do you know who, that 317 minutes is? Is that the ambulance, is that the paramedic or who

is that?

**A** No idea.

**Q** Okay. "317 arrived at scene to find above patient in care of Ferguson Police Department with CPR in progress. Patient lying on ground advised by police department that patient was running naked around parking lot when police department tased patient. Patient then went unresponsive."

**A** Right.

**Q** And then another one we will mark this as Exhibit 3.

(Exhibit 3 was marked for identification by the court reporter.)

**Q** (By Mr. Floyd) This is from Northwest Health Care, it's Exhibit 3 and it was the evening of his death. And the portion that I've highlighted doesn't it state that, "Per report by Ferguson police officer, patient was running around naked out doors banging on cars with his fists. Patient was tased and soon stopped breathing."

**A** Yes.

**Q** Okay. And then there was a deposition which I won't mark because it's in evidence. It was deposition of Brian Kaminiski. I'm sorry, no. It

was the deposition of Lieutenant Ballard, and I'll just read a portion of it to you because there's a lot on here that's highlighted and it's confusing. It's on page 88, line 21.

"Sir, if I could draw your attention back to Exhibit 12 two pages, if I could direct your attention back to Exhibit 12 to Ferguson 15. The next sentence in your report is quote, as I approached Mr. Moore and the officers, Mr. Moore let out a raspy sound and appeared to stop breathing." Period close quotes. Have I read that correctly?

"Yes." And then there's follow-up on that. Okay. Question -- this is on page 89, line 23.

"Okay. Do you think --let me just ask you then. Based upon that statement that, as you approach the officers, Mr. Moore let out a raspy sound and appeared to stop breathing. Is that the last time you saw him breathe?" And now we're on page 90, line 3.

"Yes. When he made that sound, I turned around and looked and I noticed that he wasn't breathing and that's when Officer White" and then this is the important part I wanted to ask you about because it gives us some information about the

timing of the tasing and when he stopped breathing.

"Okay. So as you approach the officer, I think you said, when you got on the scene and got out of your car, Officer White was coming up from the handcuffing. Then you got up to the officers, then you heard the raspy breathing?"

Answer, "Yes."

So that line of questioning would suggest that, as Officer White was coming up from handcuffing Moore, that's when they heard the raspy breathing. That would suggest that the difficulty breathing started in very close proximity to the last tase?

MS. SHAFAIE: Form and foundation.

**A** It's kind of hard to tell.

**Q** (By Mr. Floyd) That would support that though, that statement, would you agree?

MS. SHAFAIE: Same objection.

**A** I'd have to look at the whole thing. I can't really tell from that.

**Q** Okay. Just to review a couple of things and then we'll be finished, almost finished.

You were hired by the Ferguson Police Department, correct?

**A** Well, I was hired by Pitzer Snodgrass.

Whether it's the officers of the department, I don't know.

**Q** Which is who they represent?

**A** Okay. That's fine.

**Q** And you acknowledge, as a pathologist, that there is no pathology to support that Mr. Moore died from agitated delirium or psychosis, correct?

**A** No. I don't agree with that at all. I think that the -- when you determine the cause of death, you don't look just at the tissues, you look at all the information to do that. As far as an anatomic marker that you can point at, yes, that's correct, but there is never an anatomic marker with excited delirium that you point to that shows us why somebody died.

**Q** And you can agree that, although this is the cause of death that you and Dr. Sabharwal have signed off on, you can't explain the mechanism of that death, can you?

**A** We don't know the mechanism, that's correct.

**Q** You agree that cardiac capture can lead to v-fib?

**A** No. Cardiac capture in itself does not lead to v-fib. You have to have more energy then to induce capture.

**Q** You can agree that a heart rhythm disturbance from an electrical insult can lead to v-fib?

**A** Yes.

**Q** And you agree that TASER warns against this charge into the chest?

**A** They used to. I don't know if they still do or not.

**Q** Well, on this warning at the time, the latest warning before he was tased there was a warning against tasing into the chest.

We went over that. Do you remember that?

MS. SHAFAIE: Form and foundation.

**A** No, right. What I'm saying is I don't know if the current warnings indicate that, but at least at one point, yes, they did.

**Q** (By Mr. Floyd) I believe that the current warnings are even stronger now?

MS. SHAFAIE: Foundation.

**A** I haven't seen them.

**Q** (By Mr. Floyd) Okay. All right, but since you haven't seen them, then you can't say -- I don't want this jury to walk away with the impression that you're suggesting that TASER has backed off any of

their warnings?

**A** I don't know if they have or not.

**Q** I mean,my understanding is they've gotten even stronger as time goes on?

MS. SHAFAIE: Foundation.

**A** I'd have to look and see what the current warnings are.

**Q** (By Mr. Floyd) Okay. Well, we'll leave that issue to be decided. I don't want it to be decided over speculation.

You'd be speculating if you said that, correct?

**A** Oh, I'm not a warnings expert anyway, so I'm not going to comment on warnings.

**Q** But we can agree that we covered some warnings here and that one of the TASER warnings warrants against tasing into the chest, correct?

**A** In the document you showed me, that is correct.

**Q** And that, in fact, Moore received four TASER loads through his chest, directly over his heart, correct?

**A** Probably did.

**Q** Assuming that it was good load and connection which Kaminiski confirmed?

**A** Yes.

**Q** Okay. And that TASER warns against tasing emotionally distressed or agitated subjects and Moore was emotionally distressed when he was tased, correct?

MS. SHAFAIE: Foundation.

**A** I think the warnings say unless the situation warrants it, yeah.

**Q** (By Mr. Floyd) Okay. And then the risk of injury increases with each additional tase, correct?

**A** No.

**Q** With each additional load. There is not another risk of injury with each additional load?

**A** Same risk as the single one. The fact that you tase somebody four times --

**Q** You're not risking tearing more muscles, more fractures?

**A** No.

**Q** Lactic acid buildup?

**A** No.

**Q** Getting punched in the face once is just as risky as getting punched five times?

**A** I don't know about that, but I will tell you what --

**Q** Well --

**A** Let me finish my question.

MS. SHAFAIE: Let him finish.

**A** But the repeated discharge of the TASER and its effect on the metabolic parameters has been studied. It's in the literature doesn't show any significant changes.

**Q** (By Mr. Floyd) I just want the jury to hear your answer.

**A** Yes.

**Q** There will be other experts who have their opinions on whether more loads are more dangerous. The risk of injury -- okay.

Finally, do you acknowledge that within seconds or up to one minute after Kaminiski delivered the last of the four TASER loads to Moore, that Moore lost consciousness and eventually died?

**A** Yeah, maybe as long as a minute or so, yeah.

**Q** A minute or so. There's been nothing to go beyond a minute. I mean, that's a stretch to even take it to a minute. Do you agree? I mean, that's the furthest you could stretch it by any of the history --

MS. SHAFAIE: Form and foundation.

**A** I think they said it could have been around a minute, so that -- but give or take but somewhere

right around there.

**Q** (By Mr. Floyd) But we just went over other documents here that show suddenly and after, correct?

**A** Well, we know it's after.

**Q** We know it was sudden too, right?

**A** And it was a sudden death, yeah, I don't think there's any argument, but there is no definition of when they say after. I mean after --

**Q** He soon stopped breathing?

**A** Yeah. There is no definition of soon.

**Q** Suddenly became unresponsive?

**A** Yeah. Well, you would expect suddenly. Suddenly unresponsive, that doesn't give you a timeframe though.

**Q** And White describes it as -- or Ballard described it as, "White was standing up from cuffing him he started having breathing problems."

So we've got those descriptions, correct?

**A** And the descriptions say it could have been a minute.

**Q** And we'll let the jury decide that, but at the end of the day, all arguments aside one thing we know is that after Moore had sustained four TASER

loads to his chest in rapid succession within seconds to a minute he lost consciousness and died. Fair statement?

**A** Within a minute or thereabouts, yes. I don't think you consider them seconds.

VIDEOGRAPHER: Off the record at 4:22.

(Recess taken.)

VIDEOGRAPHER: Back on the record at 4:31.

**Q** (By Mr. Floyd) Okay. A couple questions. With regard to the diagnosis or conclusion that Mr. Moore was suffering from psychosis or agitated delirium, I want to talk to you about that.

What other criteria that you need to find in order to make a diagnosis of agitated delirium?

**A** I think you have to show intermittent marked agitation often accompanied by paranoia, you may or may not have hyperthermia, and you can look at the other -- some of the other features, you know, the more features you have of the typical case and then I think you can make the diagnosis reliably. I mean, there is a list that's probably 30 things long.

**Q** Exactly. And let's kind of go through the longer list.

**A** Well, I mean, I'd have to pull up the articles just to enumerate them all, but generally somebody inappropriately markedly agitated showing lack of touch with reality, bizarre behavior, often deistic, the nudity is very common --

**Q** How about --

**A** -- and the violence, the aggression.

**Q** Okay. Now, I've read that one of the findings with excited or agitated delirium is that the body is producing this chemical in the brain and it causes the body, internal body temperature to heat up to sometimes 107 degrees and 105 degrees, is that true?

**A** In some cases that is true.

**Q** I thought it was true in most cases?

**A** In warm climates such as where the syndrome, the acute syndrome was named Miami, they did find it. When we looked at ours, we only found it in about 40 percent of the cases.

**Q** So Mr. Moore did not have a high --

**A** Yeah, he was not hyperthermic.

**Q** And he didn't have that heat and he wasn't sweating, correct?

**A** He was not. As far as I know he was not sweating, but there is no evidence of the

hyperthermia.

**Q** So really what you've got is just him acting peculiarly?

**A** Yeah, this goes beyond that. I think, it's kind of like the old story of pornography. It's hard to define, but you know it when you see it. You know an agitated delirium when you see one. I mean, they are spectacular and they go well beyond somebody who is just agitated or disturbed.

**Q** But you weren't there?

**A** No, but the descriptions of it are pretty typical. The descriptions that -- the descriptions of what he was doing pretty typical.

**Q** But it's missing some of the ingredients that I've seen in criteria I should say in other cases which is hypothermia --

**A** Hyperthermia you mean?

**Q** Yeah.

**A** Yeah. I mean, that's one feature but it's not always there. Like I said, when I reviewed our cases from around here, we only saw hyperthermia in about 40 percent of the cases.

**Q** And you had mentioned something else that there were no anatomical markers. Explain that to

the jury.

What's that mean, there are no anatomical markers of psychosis or agitated delirium?

**A** When it causes death.

**Q** Okay. Now --

**A** So it means you can't -- there are -- there are some studies at least in the cocaine-induced agitated deliriums where a very specialized laboratory can look at some of the Dopamine receptors in the brain and tell you whether or not there is agitated delirium. Whether that works for non-cocaine deaths or non-cocaine cases or not is not clear and it doesn't tell you whether that's what killed somebody or not.

**Q** Most cases of excited or agitated delirium -- or well, let me ask you this.

Are a lot of the cases of excited or agitated delirium drug induced?

**A** Most of them are.

**Q** Okay. In this case we've got an individual that has a negative tox screen.

**A** You have to take that with the grain of salt because there are certain things that aren't tested for in toxicology and that can't be tested for or

weren't tested for back then.

For example, we've seen some cases of agitated delirium related to the ingestion of bath salts.

**Q** But you have to --

MS. SHAFAIE: Let him finish.

**A** Let me finish. Let me finish this. And routine toxicology screening doesn't pick that up, so they come up as negative tox screens unless you look for it specifically.

And so I don't know that you can absolutely rule out this being a drug-induced agitated delirium, but there is nothing that establishes that at this point.

**Q** But, I mean, here we are throughout this deposition you're saying well I'm not going to agree with that because there are no studies to support it or, you know, that's just in theory, but isn't that --

**A** What's that?

**Q** -- kind of what you're trying to do here? You're suggesting that, even though, you know, when you're talking about cardiac capture and these types of things, but when we get to this issue here, you're talking about hey maybe he was on bath salts,

but they just didn't test for them and we can't rule that out?

MS. SHAFAIE: Form.

**A** No, that's not what I said. You said it's a negative toxicology study, yes, but that does not exclude the possibility of something being there that wasn't tested for, and so it's agitated delirium no matter how you cut it. It's either related to psychosis or to some substance that we haven't identified.

**Q** Well, you don't have any evidence though to acknowledge that? There is no evidence to support that this guy was under the influence of any drugs at this time.

In fact, what evidence we do have suggest he wasn't?

**A** No. I agree with you, but you can't categorically say he wasn't under because we know now that we've seen cases of material that look like tox negative or cases of agitated delirium that we thought were toxicology negative, until we specifically looked for some other substances that you don't normally look for.

**Q** Have you shared this theory with defense counsel?

**A** It's not a theory. I mean, that's just a reality of it. I'm not saying that he is under the influence of something. I'm saying you can't exclude the possibility and it really doesn't matter because it's still agitated delirium.

Once you got agitated delirium, it really doesn't matter what caused it.

**Q** But --

**A** It seems to be, the behavior seems to be the same.

**Q** But you're making this diagnosis of agitated delirium, and would you agree that the diagnosis of agitated delirium is a diagnosis of exclusion?

**A** No.

**Q** Other doctors would disagree with you on that. Do you agree?

**A** I don't know about that. I don't think it's a diagnosis of exclusion. You look for the features, and if they're there, you call it. That's not an exclusion diagnosis.

**Q** There is no objective physical evidence or, you know, pathological evidence, pathology that you can put your finger on? It's not like there's, you know, some change in his body. This is all theory that you're coming up with, correct?

MS. SHAFAIE: Form.

**A** No, not at all. It's observations that are well grounded, that they're well accepted in the medical community.

**Q** So cover a couple things here.

There is no slides, no -- no blood samples that show that he had excited delirium or agitated delirium or any psychosis, correct?

MS. SHAFAIE: Form and foundation.

**A** There is no such test.

**Q** Okay. And there is no studies of on the autopsy that support that he had agitated delirium, correct?

**A** You mean examining the tissues? Like I said, there is no -- there is nothing in a routine autopsy that establishes that diagnosis.

**Q** And the physical evidence -- so there is no physical evidence to show that he had objective physical evidence that showed that he had agitated delirium, correct?

**A** Well, again, you're looking at the tissues, yes. Yeah, you can't in a routine autopsy make that diagnosis. It's based on what the patient does, what it's like clinically, the circumstances.

**Q** Okay. And in addition to that, he was never

diagnosed with any pre-existing, you know, any prior mental illness, was he?

**A** You know, I hadn't heard that he was.

**Q** Nothing in the record shows he was, correct?

**A** That's correct.

**Q** So we've got nothing in the records showing that he was ever diagnosed with any mental or psychosis, correct?

**A** Prior to this event.

**Q** And we've got a body temperature which is inconsistent with agitated delirium, correct?

MS. SHAFAIE: Foundation.

**A** No. It's absolutely consistent with it. You can have normal body temperature and have agitated delirium.

**Q** (By Mr. Floyd) And was there any acidic blood -- any signs of acidic blood?

**A** Acidosis. I'm sure he's got acidosis. He had arrested. He would have gotten acidosis after that.

**Q** Have you ever diagnosed a cause of death as v-fib from a TASER?

**A** I saw one case where I was reasonably convinced or I think that the TASER probably did it, although there are problems with that particular

case, so I'm not entirely sure that it has. I wouldn't go to the wall and say it had to have been that, but there is one that is pretty suspicious.

**Q** So we can say there is one case that you believe more likely than not?

**A** Yeah, I'm pretty suspicious. I don't think it more likely than not even, but I'm pretty suspicious that it was.

**Q** What percentage of excited delirium deaths show a v-fib, result in v-fib?

**A** Don't know. It's a small percentage, but I don't know what the number is. I'm kind of looking into that. Starting to look into that now.

**Q** Pretty rare, correct?

**A** It's uncommon. I don't know if I would go rare, but it's uncommon.

**Q** Rare is what you used earlier?

**A** But yeah, I think I said uncommon. I think you used rare.

**Q** Can you point me to the cardiac findings that led to your diagnosis that there was left ventricular --

**A** Ventricular hypertrophy?

**Q** Yes.

**A** Yeah, it's a 400 gram heart and he weighs

134 pounds.

**Q** We talked about that before, but you're just doing it on the mass of the heart?

**A** Yes.

**Q** And I thought maybe I've read some of your writings before, maybe I'm mistaken on this, but do you believe that African Americans as a general population have a tendency to have enlarged hearts more so than other portions of the population?

**A** Because hypertension is more common in the African American population, yes, but I don't think there is any evidence that he has hypertension, but I can't exclude that.

**Q** But you agree that African Americans have a higher rate of enlarged heart than other risks?

**A** Everything else being equal, I'm not sure that that's true.

**Q** I thought that was maybe in some of the literature.

Are you saying it's not?

**A** No. I think -- are you sure you're not talking about agitated delirium --

**Q** No.

**A** -- because I've certainly written that. No, I don't remember saying that African Americans

having larger hearts, everything else being equal.

**Q** Because of high blood pressure?

**A** Yeah, if you're in a hypertensive -- if you're looking at including hypertensive hearts, yeah, then they would because hypertension is more common in the black population, but excluding that and just taking all the parameters being equal among, you know, Caucasian and African American, I wouldn't expect that.

**Q** Because African Americans have a higher incidence of hypertension?

**A** Yes.

**Q** And hypertension is one of those kind of silent things that many people have and they don't know they have it, right?

**A** Probably not at that age so much but older, yes.

**Q** And I know you're leading back to that statement earlier and we're both going there and I believe that the statement that your writings previously that the African American population has a higher incidence of enlarged heart, that supports the idea that you never know what condition somebody's heart is in when you tase them, and officers can never know exactly what underlying

conditions a subject may or may not have?

MS. SHAFAIE: Form and foundation.

**A** That's true.

**Q** Those are all the questions I have.

MR. DOWD: I don't have any.

MR. JOHNSON: No questions. Thank you, sir.

VIDEOGRAPHER: This concludes the deposition of Michael Graham. We are off the record at 4:44. This ends disc two.

(Exhibit 4 was marked for identification by the court reporter.)

I, Linda DeBisschop, duly commissioned, qualified and authorized to administer oaths and to certify to depositions, do hereby certify that pursuant to Notice in the civil cause now pending and undetermined in the United States District Court, State of Missouri, to be used in the trial of said cause in said court, I was attended at the offices of St. Louis University, 1402 South Grand, St. Louis, Missouri, 63104, by the aforesaid attorneys; on the 8th day of March, 2016.

The said witness, being of sound mind and being by me first carefully examined and duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the case aforesaid, thereupon testified as is shown in the foregoing transcript, said testimony being by me reported in shorthand and caused to be transcribed into typewriting, and that the foregoing pages correctly set forth the testimony of the aforementioned witness, together with the questions propounded by counsel and remarks and objections of counsel thereto, and is in all respects a full, true, correct and complete transcript of the questions propounded to and the answers given by said witness; that signature of the deponent was waived by

agreement of counsel.

I further certify that I am not of counsel or attorney for either of the parties to said suit, not related to nor interested in any of the parties or their attorneys.

Dated this 13th of March, 2016.

Linda DeBisschop, CSR, CCR,
Illinois CSR No. 084.004741
Missouri CCR No. 779

COURT MEMO

Tina Moore vs. Brian Kaminski, et al.

CERTIFICATE OF OFFICER AND
STATEMENT OF DEPOSITION CHARGES

DEPOSITION OF Michael Graham, M.D.

3/8/2016
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IN WITNESS WHEREOF, I have hereunto set my hand and seal on this _____ day of _____

STATEMENT OF DEPOSITION CHARGES

Commission expires

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Notary Public